

Declaration  
of  
Lauren R. Kindler

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UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA

BERNADINE GRIFFITH, et al.,

Plaintiffs,

v.

TIKTOK, INC., et al.,

Defendants.

Case No. 5:23-cv-00964-SB-E

**DECLARATION OF LAUREN R. KINDLER**

**July 12, 2024**

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I, Lauren R. Kindler, declare as follows:

## I. INTRODUCTION AND ASSIGNMENT

1. I have been retained by counsel for TikTok, Inc. (“TTI”) and ByteDance, Inc., (collectively, “Defendants”) to offer my opinions regarding economic issues relevant to the matter of *Bernadine Griffith et al. v. TikTok, Inc., ByteDance, Inc.* It is my understanding that Bernadine Griffith, Patricia Shih, and Jacob Watters<sup>1</sup> (“Named Plaintiffs” or “Plaintiffs”) allege that TTI has intercepted, collected, stored, and used “non-TikTok users’ highly personal data whenever the non-TikTok users visit a non-TikTok website with the TikTok SDK installed.”<sup>2,3</sup> Specifically, Plaintiffs allege that TTI “can and does illicitly harvest private and personally identifiable data, such as the webpages visited by users, search queries, User IDs, User Agent, phone numbers, email addresses, IP addresses, and more.”<sup>4</sup> Named Plaintiffs allege (among other things) that “Plaintiffs and Class and Subclass members have suffered damages” including: (a) “loss of the promised benefits of their experience on the websites on which the TikTok SDK is installed” and (b) “loss of control over property which has marketable value.”<sup>5</sup> Plaintiffs further allege that Defendants have been unjustly enriched as a result of the transmission and use of their data.<sup>6</sup>

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<sup>1</sup> [REDACTED]

[REDACTED] (Deposition of Jacob Leady taken June 25, 2024 (“Watters Deposition”), pp. 5 and 302.)

<sup>2</sup> Plaintiffs claim that the term “TikTok SDK” refers to “the TikTok Pixel, the TikTok Events API, and all similar software developed and marketed by Defendants that track the private data of U.S. residents.” (Second Amended Class Action Complaint dated April 11, 2024 (“Second Amended Complaint”), p. 2.)

<sup>3</sup> In the Second Amended Complaint, Philip Cantore is also listed as a Named Plaintiff (in addition to Bernadine Griffith, Patricia Shih, and Jacob Watters). However, in Plaintiffs’ Memorandum of Points and Authorities in Support of Their Motion for Class Certification dated June 21, 2024 (“Plaintiffs’ Motion for Class Certification”) and the Declaration of Russell W. Mangum III, Ph.D. in Support of Plaintiffs’ Motion for Class Certification dated June 21, 2024 (“Mangum Declaration”), Philip Cantore is not listed as a Named Plaintiff. (See Second Amended Complaint, p. 4. See also, Plaintiffs’ Motion for Class Certification, p. 5. See also, Mangum Declaration, p. 1.)

<sup>4</sup> Second Amended Complaint, p. 15.

<sup>5</sup> Second Amended Complaint, p. 32.

<sup>6</sup> Second Amended Complaint, p. 62.

2. Dr. Russell Mangum submitted a declaration on June 21, 2024 in support of class certification in this matter (the “Mangum Declaration”). In his declaration, Dr. Mangum opined that “assessment of economic remedies attributed to Defendants’ alleged wrongdoing is feasible on a class-wide basis” and “the data and methodology relevant to the assessment and computation of economic impact is common to the class.”<sup>7</sup>

3. I have been requested by counsel for Defendants to independently evaluate from an economic and damages perspective: (a) whether standard economic analysis can be used to quantify reliably economic injury and economic damages on a Class-wide basis using common proof in this matter and (b) whether Dr. Mangum offers any reliable methodology for calculating damages on a Class-wide basis using common proof.

4. In this Declaration, I focus on issues relating to class certification and not on the merits of the Mangum Declaration. That I do not address an issue in the Mangum Declaration or Plaintiffs’ Motion for Class Certification is not, and should not be construed as, an admission that I agree with the positions taken by Dr. Mangum or Plaintiffs on such issues.

## **II. QUALIFICATIONS AND EXPERIENCE**

5. I am a Managing Principal at Analysis Group, Inc. (“AG”). AG provides economic, financial, and business strategy consulting to its clients and specializes in the interpretation of economic and financial data and the development of economic and financial models. AG consists of approximately 1,000 professionals who specialize in, among other things, the fields of economics, accounting, statistics, finance, and strategy consulting.

6. My primary responsibility at AG is to provide financial, economic and damage quantification consulting services to our clients. For more than 20 years I have provided financial

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<sup>7</sup> Mangum Declaration, p. 7.

and economic consulting services in various matters including intellectual property disputes, false advertising allegations, securities litigation, antitrust matters, breach of contract matters, and general damages assessments. I have evaluated economic models of alleged unjust enrichment and/or claimed damages in numerous cases, including in breach of contract, trade secret misappropriation, and class actions. I have consulted with numerous publicly traded and privately held companies across a variety of industries including social media platforms, software, medical devices, consumer products, electronics, biotechnology, and oil and gas, among others. My work has also included the development of complex damage models, analysis of statistical data, and analysis of stock price movements.

7. I received my B.A. in Economics from Tulane University and my M.A. in Economics from Southern Methodist University. Attached as **Appendix A** is a true and correct copy of my current resume and testimony from the past four years. My business address is Analysis Group, Inc., Park Place Center, 2911 Turtle Creek Blvd., Suite 600, Dallas, Texas, 75219.

8. AG is being compensated based on hours incurred and the hourly rates of the personnel involved. Payment to AG is not contingent on my findings or the outcome of this matter. AG is being compensated at a rate of \$1,100 per hour for my time. Hourly rates for other AG personnel working on this matter range from \$445 to \$785 per hour, depending on their level and experience.

### **III. INFORMATION REVIEWED AND CONSIDERED**

9. The information and data available to me in forming my opinions are contained in **Appendix B**. This information includes legal documents, deposition testimony (and associated exhibits), documents produced by the parties, and documents independently obtained.

10. My analyses and opinions are based on the information available to date and are contained throughout the narrative to this declaration and the associated exhibits. I reserve the

ability to update my analyses and opinions including in the event additional information is provided to me. I also reserve the ability to use demonstrative exhibits and/or other information to illustrate my opinions.

#### **IV. SUMMARY OF OPINIONS**

11. Based on my review of the available documentary evidence and deposition testimony, independent research, and evaluation of the analyses presented in the Mangum Declaration, I conducted an independent evaluation of Plaintiffs' assertion that claimed damages and alleged unjust enrichment can be quantified reliably on a Class-wide basis using common proof.

12. Dr. Mangum proposes three methodologies by which he claims he can measure Class-wide recovery, or economic remedies, for Class Members at this stage of the litigation. These three methodologies include (a) disgorgement of Defendants' profits on a Class-wide basis, (b) Plaintiffs' actual damages (restitutionary damages), and (c) a "methodology for calculating statutory damages pursuant to ECPA and CIPA."<sup>8</sup> I have evaluated each of these proposed approaches and determined that none provides a reliable methodology for calculating claimed damages to putative Class members or alleged unjust enrichment to Defendants with an economic nexus to Plaintiffs' theory of liability, using common proof.

13. Based on a thorough analysis, I concluded that due to variations in putative Class members' preferences regarding advertisers' transmission and use of personal data and variations in the types and amount of data transmitted across putative Class members (among other factors), individualized inquiries would be required to determine whether and to what extent putative Class members suffered economic injury attributable to the alleged wrongful conduct. Therefore, the

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<sup>8</sup> Mangum Declaration, pp. 17 – 18.

claimed injury and claimed damages (if any) to putative Class members as a result of the alleged wrongful conduct cannot be evaluated reliably on a Class-wide basis using common proof.<sup>9</sup>

14. Dr. Mangum's proposed unjust enrichment approaches fail to establish any reliable Class-wide methodology to calculate disgorgement even assuming that TTI realizes some quantifiable gain from uses of non-TikTok user data because they fail to isolate any alleged gains to TTI from the transmission and alleged use of putative Class members' data, or the different ways such data may have been used, separate and apart from the value of TikTok user data.<sup>10</sup>

15. I have further concluded that Dr. Mangum's proposed restitutionary damages approaches are based on claimed market values of personal data (specifically, Screenwise and SavvyConnect) that are not tied to or consistent with the data advertisers transmit to TTI via the Pixel and Events API for any given Class member.<sup>11</sup> Lastly, Dr. Mangum's proposed methodology for calculating statutory damages fails to account for putative Class members' ability to elect actual damages, a threshold question that would require individualized inquiries for each Class member.<sup>12</sup>

## **V. BACKGROUND OF THE PARTIES**

### **A. Named Plaintiffs**

16. I understand that Named Plaintiffs include Bernadine Griffith, Patricia Shih, and Jacob Watters.<sup>13</sup> According to Plaintiffs' Motion for Class Certification, during the Class Period, each Named Plaintiff (a) has never had a TikTok account, (b) has had their web browser or system

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<sup>9</sup> See Section VIII.

<sup>10</sup> See Section X.

<sup>11</sup> See Section XI.

<sup>12</sup> See Section XII.

<sup>13</sup> In the Second Amended Complaint, Philip Cantore is also listed as a Named Plaintiff (in addition to Bernadine Griffith, Patricia Shih, and Jacob Watters). However, in Plaintiffs' Motion for Class Certification and the Mangum Declaration, Philip Cantore is not listed as a Named Plaintiff. (See Second Amended Complaint, p. 4. See also, Plaintiffs' Motion for Class Certification, p. 5. See also, Mangum Declaration, p. 1.)

setting turned on to block third-party cookies, and (c) visited websites that use the TikTok Pixel (“the Pixel”) and whose server uses Events API.<sup>14</sup>

## B. Defendants

17. TTI is a California corporation, and ByteDance, Inc. is a Delaware corporation.<sup>15</sup> I understand that TTI has offices in the United States and its employees are involved in work on the TikTok platform, which is an entertainment platform that allows users to generate and share videos.<sup>16</sup>

## VI. OVERVIEW OF PLAINTIFFS’ CLASS ALLEGATIONS

18. I understand that Named Plaintiffs seek certification of the following nationwide putative classes.<sup>17</sup>

- a. Nationwide Pixel Class. The Nationwide Pixel Class consists of “all natural persons residing in the United States who visited a website using the TikTok Pixel from March 2022 to the present, and who have never been registered users of the TikTok app or held any TikTok account.”
- b. Nationwide Pixel and Events API Class. The Nationwide Pixel and Events API Class consists of “all natural persons residing in the United States who visited a website using the TikTok Pixel and whose server uses the TikTok Events API from March 2022 to the present, and who have never been registered users of the TikTok app or held any TikTok account.”
- c. Nationwide Pixel Cookie-Blocking Class. The Nationwide Pixel Cookie-Blocking Class consists of “all natural persons residing in the United States who visited a website using the TikTok Pixel from March 2022 to the present, who have never been registered users of the TikTok app or held any TikTok account, and who had web browser or system settings turned on to block third-party cookies.”
- d. Nationwide Pixel and Events API Cookie-Blocking Class. The Nationwide Pixel and Events API Cookie-Blocking Class consists of “all natural persons residing in

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<sup>14</sup> Plaintiffs’ Motion for Class Certification, p. 5.

<sup>15</sup> Second Amended Complaint, pp. 4 – 5. *See also*, Defendants TikTok Inc. and ByteDance Inc.’s Answer to Plaintiffs’ Second Amended Complaint dated April 22, 2024, pp. 2 – 3.

<sup>16</sup> Second Amended Complaint, pp. 2 and 4 – 5. *See also*, Defendants TikTok Inc. and ByteDance Inc.’s Answer to Plaintiffs’ Second Amended Complaint dated April 22, 2024, pp. 1 and 3.

<sup>17</sup> Plaintiffs’ Notice of Motion and Motion for Class Certification dated June 21, 2024 (“Plaintiffs’ Notice of Motion for Class Certification”), pp. 1 – 4. *See also*, Mangum Declaration, pp. 2 – 3.

the United States who visited a website using the TikTok Pixel and whose server uses the TikTok Events API from March 2022 to the present, who have never been registered users of the TikTok app or held any TikTok account, and who had web browser or system settings turned on to block third-party cookies.”

- e. Nationwide ECPA Class.<sup>18</sup> The Nationwide ECPA Class consists of “all natural persons residing in the United States who have never been registered users of the TikTok app or held any TikTok account, and, from March 2022 to the present, visited a website using the TikTok Pixel but without ‘Search’ as an optional event from the TikTok Pixel configuration menu.”
19. I understand that, in the alternative, Plaintiffs seek to certify the following classes.<sup>19</sup>
- a. Rite Aid Nationwide Class. The Rite Aid Nationwide Class consists of “all natural persons residing in the United States who visited the Rite Aid website from March 2022 to the present, and who have never been registered users of the TikTok app or held any TikTok account.”
  - b. Hulu Nationwide Class. The Hulu Nationwide Class consists of “all natural persons residing in the United States who visited the Hulu website from March 2022 to the present, and who have never been registered users of the TikTok app or held any TikTok account.”
  - c. Etsy Nationwide Class. The Etsy Nationwide Class consists of “all natural persons residing in the United States who visited the Etsy website from March 2022 to the present, and who have never been registered users of the TikTok app or held any TikTok account.”
  - d. Upwork Nationwide Class. The Upwork Nationwide Class consists of “all natural persons residing in the United States who visited the Upwork website from March 2022 to the present, and who have never been registered users of the TikTok app or held any TikTok account.”
  - e. Sweetwater Nationwide Class. The Sweetwater Nationwide Class consists of “all natural persons residing in the United States who visited the Sweetwater website from March 2022 to the present, and who have never been registered users of the TikTok app or held any TikTok account.”

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<sup>18</sup> “ECPA” refers to the Electronic Communications Privacy Act of 1986, which was passed to protect “wire, oral, and electronic communications while those communications are being made, are in transit, and when they are stored on computers.” (Electronic Communications Privacy Act of 1986 (ECPA), U.S. Department of Justice Office of Justice Programs. (<https://bja.ojp.gov/program/it/privacy-civil-liberties/authorities/statutes/1285>, viewed on July 2, 2024.))

<sup>19</sup> Plaintiffs’ Notice of Motion for Class Certification, pp. 1 – 4. *See also*, Mangum Declaration, pp. 3 – 5.

20. For each of the Nationwide classes above (except for the Sweetwater Nationwide Class), Named Plaintiffs also seek certification of a corresponding California Subclass.<sup>20</sup>

21. Plaintiffs allege that Defendants use the Pixel and Events API to “secretly intercept[] and collect[] the[] private data” of non-TikTok users (i.e., putative Class members) who access websites using the Pixel and / or whose server uses Events API.<sup>21</sup> In particular, since an advertiser is not able to differentiate between TikTok users and non-TikTok users before transmitting event data using the Pixel or Events API, Plaintiffs assert that “[Defendants] indiscriminately collect a default baseline of data from *all* website visitors,” rather than just “website visitors who are TikTok users.”<sup>22</sup> Additionally, Plaintiffs allege that the transmitted data contains [REDACTED]

[REDACTED]  
[REDACTED]  
<sup>23</sup> Plaintiffs assert that the conduct described above “presents common issues” among the proposed nationwide classes and California subclasses.<sup>24</sup>

## **VII. OVERVIEW OF THE PIXEL AND EVENTS API AND DATA TRANSMITTED BY ADVERTISERS**

22. TTI, among other large tech companies, makes tools available to advertisers to help measure and optimize performance of advertising campaigns.<sup>25</sup> An advertiser can configure the

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<sup>20</sup> Plaintiffs’ Notice of Motion for Class Certification, pp. 1 – 4. *See also*, Mangum Declaration, pp. 3 – 5.

<sup>21</sup> Second Amended Complaint, p. 4. (Bracketed text added for clarification.)

<sup>22</sup> Plaintiffs’ Motion for Class Certification, pp. 1 – 2. (Bracketed text added for clarification.) (Emphasis in original.)

<sup>23</sup> Plaintiffs’ Motion for Class Certification, pp. 1 – 2.

<sup>24</sup> Plaintiffs’ Motion for Class Certification, p. 2.

<sup>25</sup> Defendants TikTok Inc. and ByteDance Inc.’s Amended Responses and Objections to Plaintiffs’ Second Set of Interrogatories (Nos. 3 – 14) dated April 16, 2024, pp. 5 – 6.

Pixel and Events API to transmit to TTI information about specified actions (“events”) that a visitor may take on the advertiser’s website and which the advertiser has selected to measure.<sup>26</sup>

23. On its Business Help Center website, TTI describes ways advertisers can set up the Pixel, Events API, or both.<sup>27</sup> TTI’s integration tools such as the Pixel and Events API allow advertisers to customize the “events” that they transmit to TTI.<sup>28</sup> The Pixel and Events API are described in more detail below.

- a. Pixel. The Pixel is a “piece of code that [an advertiser] can place on [its] website that allows [it] to share website events with TikTok.”<sup>29</sup>

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- b. Events API. Events API is a “secure server-to-server (S2S) integration with TTI that allows advertisers to share marketing data with [TTI’s server] in a secure

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<sup>26</sup> 

(Deposition of Simran Sahni taken June 18, 2024 (“Sahni Deposition”), pp. 8 and 97 – 99.)

<sup>27</sup> See About TikTok Pixel. (<https://ads.tiktok.com/help/article/tiktok-pixel>, viewed on June 19, 2024.) See also, About Events API, TikTok Business Help Center. (<https://ads.tiktok.com/help/article/events-api?redirected=2>, viewed on April 13, 2024.)

<sup>28</sup> TTI states that users can “choose events that align with [their] business funnel,” allowing them to “categorize event types within a funnel that reflects the user journey of [their] site.” Events are further customizable through selecting parameters, which “provide additional context for the events [a website developer] has selected that are used to unlock more advanced downstream solutions such as TikTok Shopping Ads and Value Optimization Ads.” (Get Started with Pixel, TikTok Business Help Center. (<https://ads.tiktok.com/help/article/get-started-pixel>, viewed on June 21, 2024.)) (Bracketed text added for clarification.) See also, About Standard and Custom Events, TikTok Business Help Center. (<https://ads.tiktok.com/help/article/standard-events-parameters?lang=en>, viewed on April 13, 2024.)

<sup>29</sup> About TikTok Pixel. (<https://ads.tiktok.com/help/article/tiktok-pixel>, viewed on June 19, 2024.) (Bracketed text added for clarification.) See also, Schnell Declaration, Section VI.

<sup>30</sup> Deposition of Rebecca Wong taken May 17, 2024 (“Wong Deposition”), pp. 77 – 78. (Bracketed text added for clarification.)

connection directly from their server.”<sup>31</sup> Events API also provides “flexibility for advertisers to customize the information they share with TikTok.”<sup>32</sup>

24. The actual data transmitted by the Pixel and Events API differs across advertisers’ websites (and servers) and individual website visitors [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>33</sup> Some of the factors contributing to these variations are discussed in **Section VIII.A.**

## **VIII. DETERMINING WHETHER AND TO WHAT EXTENT A PUTATIVE CLASS MEMBER WAS INJURED AS A RESULT OF THE ALLEGED WRONGFUL CONDUCT REQUIRES INDIVIDUALIZED INQUIRY**

25. From an economic and claimed damages perspective and based on the available evidence, assessing whether and to what extent a putative Class member suffered economic injury as a result of advertisers’ transmission and TTI’s alleged use of data (if at all) requires individualized information specific to each putative Class member. Specifically, evidence in this matter demonstrates that there is significant variation in at least the following ways across putative Class members that would impact each individual putative Class member’s economic harm suffered (if any):

- a. variation in the types and amount of data transmitted across putative Class members;
- b. variation in putative Class members’ preferences regarding the collection and use of data; and

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<sup>31</sup> TikTok launches enhanced Events API with consolidated endpoint, TikTok for Business. (<https://www.tiktok.com/business/en-US/blog/events-api-consolidated-endpoint>, viewed on June 17, 2024.) (Bracketed text added for clarification.) *See also*, Schnell Declaration, Section VI.

<sup>32</sup> About Events API, TikTok Business Help Center. (<https://ads.tiktok.com/help/article/events-api?redirected=2>, viewed on April 13, 2024.)

<sup>33</sup> Kirchgessner Deposition, pp. 44 – 45 and 310 – 311. *See also*, Deposition of Lizzie Li taken June 5, 2024 (“Li Deposition”), pp. 38 – 39.

c. variation in putative Class members' expectations and awareness of data tracking and sharing of data to third parties.

26. Absent individualized analyses into the above considerations for each putative Class member, an evaluation and calculation of claimed damages on a Class-wide basis would not be reliable from an economic perspective. Even under Plaintiffs' theory that their data has marketable value, a reliable assessment of that value (if any) would require individualized inquiry to account for differences in these considerations (and associated differences in claimed value) across putative Class members. Any attempt to compensate the entire putative Class based on a single methodology without individualized analysis of these considerations would result in a windfall gain to many putative Class members who suffered no economic injury, either because (a) they did not care whether their data is transmitted or used; (b) any usage of their data resulted in no measurable gain to TTI (making it even less likely that an individual would have a preference against such data sharing); and/or (c) they expected or were aware of data collection and sharing to third parties such as TTI and took no actions to prevent or limit such sharing.

**A. Variation in Types and Amount of Data Transmitted across Putative Class Members**

27. For any putative Class members who may have had a preference not to have their data transmitted in the precise manner at issue in this case, from an economic perspective, a reliable analysis of alleged economic injury associated with the alleged wrongful conduct would depend on the type and amount of data transmitted for each individual putative Class member. I understand that Plaintiffs contend there are seven categories of data which are automatically transmitted by the Pixel: timestamp, IP address, user agent, cookies, URL, event information, and content information.<sup>34</sup> Even assuming for purposes of my analysis at this stage that is accurate,

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<sup>34</sup> Declaration of Zubair Shafiq, Ph.D., in Support of Plaintiffs' Motion for Class Certification dated June 21, 2024 ("Shafiq Declaration"), pp. 24 – 33. *See also*, Mangum Declaration, p. 10.

Plaintiffs also contend that the transmitted data may or may not contain [REDACTED]  
[REDACTED]<sup>35</sup> Even accepting Plaintiffs' premise that such data was taken without the individual's knowledge or consent (another issue that is subject to individualized inquiry), a reliable assessment of claimed economic injury with a nexus to Plaintiffs' theory of liability would still depend on the types and amount of data transmitted for a particular individual putative Class member. This is because, under Plaintiffs' theory that their data has marketable value, different types and amounts of data would have different value.<sup>36</sup> Therefore, a reliable assessment of the value of a putative Class member's data (if any) would require individual inquiry to determine the type and amount of data collected.

28. Evidence in this matter indicates that there is significant variation in the types and amount of data transmitted by the Pixel and Events API across putative Class members and even across Named Plaintiffs. Specifically, the types and amount of data transmitted for an individual putative Class member vary depending on at least (a) the websites visited by individual putative Class members and depending on how each advertiser configures the Pixel and/or Events API and (b) each putative Class member's engagement with an advertiser's website on a particular webpage (i) that uses the Pixel and/or (ii) for which the advertiser has configured its server to use Events API to transmit event information. Each of these observations are discussed in detail below.

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<sup>35</sup> Plaintiffs' Motion for Class Certification, pp. 1 – 2.

<sup>36</sup> For example, a 2014 study by Beales and Eisenach found that "advertisers place significantly greater value on users for whom more information is available." (J. Howard Beales and Jeffrey A. Eisenach, "An Empirical Analysis of the Value of Information Sharing in the Market for Online Content," Navigant Economics dated January 2014 ("Beales 2014"), p. 1.) See also, Watters Deposition, pp. 87 – 88

[REDACTED] See also, Watters Deposition pp. 153 – 154

[REDACTED] (Bracketed text added for clarification.)

i. *Variation Due to Differences in Configuration across Advertisers*

29. The types of data transmitted to TTI vary depending on advertisers' Pixel and/or Events API use and configurations.<sup>37</sup> Thus, the particular types and amount of data (if any) transmitted for an individual putative Class member would depend on at least which websites that individual visited and how those advertisers used and configured the Pixel and/or Events API at the time of each visit. Generally, I understand from Mr. Schnell that whether and what information is transmitted to TTI depends on the functionality, design, obligations, and services of each website, which the advertiser (not TTI) ultimately controls.<sup>38</sup> Some, but not all, sources of variation in the types and amount of data transmitted due to differences in the Pixel and/or Events API configurations are described below.

- a. Variation in Configuration of Events to Be Captured. Plaintiffs allege that Defendants "encourage non-TikTok websites to configure...fourteen standard events" with the Pixel,<sup>39</sup> but as I understand from Mr. Schnell, TTI does not require advertisers to configure the Pixel on their websites to capture those or only those standard events. In addition,

<sup>40</sup> Even for websites that do choose

<sup>41</sup>

- b. Variation in Usage of Advanced Matching. TTI offers a feature called Advanced Matching that can be used with the Pixel.

<sup>42</sup>

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<sup>37</sup> Li Deposition, pp. 37 – 39. *See also*, Deposition of Branyak Shao taken June 7, 2024 ("Shao Deposition"), pp. 266 – 269.

<sup>38</sup> Schnell Declaration, Sections IV, VI, VII, and VIII.

<sup>39</sup> Second Amended Complaint, p. 19. *See also*, About Supported Standard Events, TikTok, May 2024. (<https://ads.tiktok.com/help/article/supported-standard-events>, viewed on June 25, 2024.)

<sup>40</sup> Schnell Declaration, Section VII.

<sup>41</sup> Schnell Declaration, Section VIII.

<sup>42</sup> Sahni Deposition, pp. 105 – 106.

[REDACTED]  
[REDACTED] 43 [REDACTED]

- c. Usage of Pixel Alone or in Combination with Events API. I understand from Mr. Schnell that the technology of these tools differs in terms of what data (if any) they transmit and when.<sup>44</sup> I understand from Mr. Schnell that [REDACTED]

[REDACTED] 45 Moreover, I understand from Mr. Schnell that [REDACTED]

[REDACTED] I understand that the reason for where and how the Pixel is installed depends on the advertiser's preferences and resulting Pixel configuration, website code, and website configuration.<sup>46</sup>

- d. Ability to Configure Data Collection and Use. I understand from Mr. Schnell that [REDACTED]

[REDACTED] 47 I understand that advertisers have several options to configure the data transmitted through the Pixel or Events API. Examples are summarized below.

- i. Configuration of Cookies. First-party cookies<sup>48</sup> can be disabled for the Pixel by the advertiser and thus not shared with TTI.<sup>49</sup> As such, the data allegedly transmitted in connection with a putative Class member's visit to a website where first-party cookies were disabled likely will differ from the data allegedly transmitted in connection with a putative Class member's visit to a website where first-party cookies were not disabled. Additionally, I understand from Mr. Schnell that a website may choose to limit the sharing of information that TTI can receive through TTI's third-party cookies.<sup>50</sup> As such, the data transmitted may also vary depending on the putative Class member's use of an ad blocker or blocking of third-party (and first-party) cookies.<sup>51</sup> Additionally,

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<sup>43</sup> Sahni Deposition, pp. 109 and 188.

<sup>44</sup> Schnell Declaration, Section VI.

<sup>45</sup> Schnell Declaration, Section VI.

<sup>46</sup> Schnell Declaration, Section VI.

<sup>47</sup> Schnell Declaration, Section VII.

<sup>48</sup> First-party cookies are placed on a browser by a web server when a person visits a website. The cookie then tracks that person's activities on that website only. (What's the Difference between a Cookie, a Pixel, and a Tag?, Learn Web Analytics. (<https://learnwebanalytics.com/whats-the-difference-between-a-cookie-a-pixel-and-a-tag>, viewed on June 20, 2024.))

<sup>49</sup> Schnell Declaration, Sections VI and VII.

<sup>50</sup> Schnell Declaration, Sections VI and VII.

<sup>51</sup> The actual data restricted, and thus the data transmitted, varies depending on the type of ad blocker. (Kirchgessner Deposition, pp. 310 – 311.)

[REDACTED]  
52

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- ii. Configuration to Disable Collection. Since the release of the Pixel, advertisers have been able to configure their website to disable the Pixel in response to user inputs, such as

54 [REDACTED]

55 Further,

[REDACTED]  
56

- iii. HTTP Communication Methods. I understand from Mr. Schnell that users' browsers communicate data to a website via an object called a "form." I understand that entering "parameters" into a form occurs when, for example, a user types search terms into a form (when performing a search on a search engine) and hits enter or clicks on the search button. I further understand that the form object will send the browser to a different page on the same website and will pass the search term parameters (and potentially other parameters) to the other page. According to Mr. Schnell, there are two methods of doing this: (i) GET and (ii) POST.<sup>57</sup> I understand that the GET method adds parameters to the end of the URL, whereas the POST method allows webpages to communicate parameters to other pages without putting them in the URL (i.e., the parameters cannot be seen by the website visitors themselves or by other websites that may be able to see the URL), which is very important for privacy.<sup>58</sup> Therefore, depending on the HTTP communication method (i.e., GET or POST) used by each website visited by an individual putative Class member, the information collected (and included in the URL) could differ.<sup>59</sup>

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<sup>52</sup> Li Deposition, pp. 92 – 93.

<sup>53</sup> Li Deposition, pp. 202 – 205.

<sup>54</sup> Li Deposition, pp. 202 – 204.

<sup>55</sup> Li Deposition, pp. 203 – 204.

<sup>56</sup> Li Deposition, pp. 204 – 205.

<sup>57</sup> Schnell Declaration, Section V.

<sup>58</sup> Mr. Schnell further noted that the POST method is the best practice for any website that did not want to share parameters with anyone who could see the URL. (Schnell Declaration, Section V.)

<sup>59</sup> Mr. Schnell also noted that to the extent information (e.g., e-mail addresses) are part of the URL that is sent to TikTok from the browser, this is due to advertisers not using best security practices and that, in general, advertisers' websites should not be using the GET method when passing parameters. (Schnell Declaration, Sections V and IX.)

*ii. Variation Due to Differences in Engagement across Putative Class Members*

30. Engagement with websites using the Pixel and/or whose server uses the Events API would be expected to vary across putative Class members, causing additional individualized variations in the types and amount of data collected for each putative Class member.

- a. Frequency of Visiting Websites with the Pixel and/or Events API. There is considerable potential heterogeneity in how individuals interact with websites that use the Pixel and/or Events API. Some putative Class members may visit one or more of such websites every day, while others may do so infrequently or not at all. This would directly affect the frequency and volume of data collected, and thus the extent of alleged harm.
- b. Actions Performed When Visiting Websites with the Pixel and/or Events API. I understand from Mr. Schnell that data transmitted when a putative Class member visits a particular website could vary significantly depending on the actions he or she takes during each individual visit (including which pages they visit and the actions taken on those pages for which the event data transmitted to TTI would further vary depending on the configuration of the Pixel or Events API). [REDACTED]

[REDACTED]  
60

[REDACTED]  
61

- c. Variation in Web Browser Settings. The use of different web browser privacy settings could impact the type and amount of data allegedly transmitted by the Pixel and Events API.<sup>62</sup> I understand from Mr. Schnell that an individual putative Class member's browser settings can determine whether and what information is transmitted as a result of their activity.<sup>63</sup> For example, Safari offers iCloud+ subscribers a feature called iCloud Private Relay, which prevents websites from seeing the real IP address.<sup>64</sup> [REDACTED]  
[REDACTED]<sup>65</sup> Even among the three Named Plaintiffs, there is variation in the type of web browser used to visit websites using the Pixel or whose server uses the Events API. [REDACTED]

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<sup>60</sup> Schnell Declaration, Sections VII and IX.

<sup>61</sup> Sahni Deposition, pp. 169, 188, and 198 – 199.

<sup>62</sup> Schnell Declaration, Section VII.

<sup>63</sup> Schnell Declaration, Section VII.

<sup>64</sup> Browse the Web Privately in Safari on iPhone, iPhone User Guide. (<https://support.apple.com/en-gb/guide/iphone/iphb01fc3c85/ios>, viewed on July 12, 2024.) *See also*, Change Privacy Settings in Safari On Mac, Safari User Guide. (<https://support.apple.com/en-gb/guide/safari/sfri35610/mac>, viewed on July 12, 2024.)

<sup>65</sup> [REDACTED]

d. Variation in Web Browser Extensions. The use of different web browser extensions could impact the types and amount of data allegedly collected by the Pixel and/or Events API. I understand from Mr. Schnell that an individual putative Class member's use of browser extensions can determine whether and what information is transmitted as a result of their activity.<sup>67</sup> I understand that web browser extensions differ in terms of settings and configurations,<sup>68</sup> which settings and configurations can be enabled or disabled,<sup>69</sup> how effective they are at blocking web trackers using pixel technology,<sup>70</sup> and how many people use any given extension for a particular browser.<sup>71</sup> For example, Ghostery, [REDACTED] “removes personal identifiers and replaces them with random values.”<sup>72</sup>

**B. Variation in Putative Class Members' Preferences Regarding Collection and Use of Data**

31. From an economic and damages perspective, an individual's preferences regarding collection and use of data (including personal and/or event data) affect the determination of whether and to what extent that individual suffered economic injury attributable to the alleged

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<sup>66</sup> Second Amended Complaint, pp. 36 – 37, 39, and 41 – 42. *See also*, Declaration of Bernadine Griffith dated June 20, 2024 (“Griffith Declaration”), p. 1. *See also*, Declaration of Patricia Shih dated June 21, 2024 (“Shih Declaration”), p. 1. *See also*, Declaration of Jacob Watters dated June 20, 2024 (“Watters Declaration”), p. 1.

<sup>67</sup> Schnell Declaration, Section VII.

<sup>68</sup> *See, e.g.*, Kristina Radivojevic, Nicholas Clark, Anna Klempay, and Paul Brenner, “Defending Novice User Privacy: An Evaluation of Default Web Browser Configurations,” Computers & Security, Vol. 140, 2024 (“Radivojevic et al. (2024)”), p. 3.

<sup>69</sup> *See, e.g.*, Nikolaos Tsalis, Alexios Mylonas, and Dimitris Gritzalis, “An Intensive Analysis of Security and Privacy Browser Add-ons” in Risks and Security of Internet Systems, Costas Lambrinoudakis and Alban Gabillon (Eds.), Springer, 2016 (“Tsalis et al. (2016)”), pp. 263 – 270. Tsalis et al. (2016) found that each set of web browser extensions has its own unique set of features. *See also*, Radivojevic et al. (2024), p. 3. Radivojevic et al. (2024) found that “even with the additional privacy customization, these features cover different ranges of protective measures, some more exhaustive than others.”

<sup>70</sup> Georg Merzdovnik, Markus Huber, Damjan Buhov, Nick Nikiforakis, Sebastian Neuner, Martin Schmiedecker, and Edgar Weippl, “Block Me If You Can: A Large-Scale Study of Tracker-Blocking Tools,” IEEE European Symposium on Security and Privacy, 2017 (“Merzdovnik et al. (2017)”), pp. 320 – 321. Merzdovnik et al. (2017) found that the effectiveness of web browser extensions, such as Ghostery and uBlock Origin, in blocking web trackers varies.

<sup>71</sup> *See, e.g.*, Chrome Web Store, Extensions, Privacy & Security. ([https://chromewebstore.google.com/category/extensions/make\\_chrome\\_yours/privacy](https://chromewebstore.google.com/category/extensions/make_chrome_yours/privacy), viewed on July 9, 2024.) *See also, e.g.*, FireFox Browser Add-ons, Extensions, Privacy & Security. (<https://addons.mozilla.org/en-US/firefox/extensions/category/privacy-security>, viewed on July 9, 2024.)

<sup>72</sup> Tracker & Ad Blocker, Ghostery. (<https://www.ghostery.com/>, viewed on July 12, 2024.) *See also,* [REDACTED]

wrongful conduct. Specifically, Plaintiffs allege that they have a preference for privacy and control over the data that is transmitted by advertisers via the Pixel or Events API.<sup>73</sup> However, while some putative Class members may have such preferences, many Americans (and hence, many putative Class members) do not have a preference whether the type of data at issue in this matter is or is not transmitted to third parties.<sup>74</sup> Therefore, from an economic perspective, individualized inquiry and analysis regarding putative Class members' preferences regarding collection and use of such data would be required to determine whether and to what extent individual Class members suffered economic injury attributable to the alleged wrongful conduct (if at all).

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<sup>73</sup> Second Amended Complaint, pp. 58 and 63.

[REDACTED] . (Shafiq Declaration, pp. 24 – 33.)

<sup>74</sup> Examples of academic and industry studies that provide evidence of variation in individuals' privacy settings include the following:

- A 2019 study by Dr. Anya Skatova et al. found that "consumers with the same underlying privacy preferences might make different decisions while sharing different types of data because the assessment of risks and benefits will be different in each data sharing environment." (Skatova, A. et al. (2019), Unpacking Privacy: Willingness to pay to protect personal data, pp. 1 – 42, at pp. 8 and 28 – 29. (<https://osf.io/preprints/psyarxiv/ahwe4>, viewed on June 28, 2024.))
- A 2019 survey conducted by the Center for Data Innovation found that "only one in four Americans want online services such as Facebook and Google to collect less of their data if it means they would have to start paying a monthly subscription fee." (Survey: Few Americans Willing to Pay for Privacy. (<https://datainnovation.org/2019/01/survey-few-americans-willing-to-pay-for-privacy/>, viewed on June 27, 2024.))
- In addition, a 2020 study by Garrett Johnson et al. (and cited by Dr. Mangum) noted that "certain types of users are more likely to opt out" and found that there is substantial variation in data privacy concerns among participants by U.S. cities and states, age, income levels and race. Specifically, the study reported that "opt-out rates are positively correlated with age and both high- and low-income extremes but negatively correlated with Asian- and African-American population shares as well as education levels." (Garrett A. Johnson, Scott K. Shriver, and Shaoyin Du, "Consumer Privacy Choice in Online Advertising: Who Opted Out and at What Cost to Industry?" Marketing Science 39, No. 1, 2020, p. 34.)

(*See also, e.g.*, The Consumer-Data Opportunity and the Privacy Imperative. (<https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/the-consumer-data-opportunity-and-the-privacy-imperative>, viewed on June 26, 2024.) *See also, e.g.*, Cookies Study: 40% of Americans Blindly Accept Internet Cookies, But Most Don't Know What They Do. (<https://allaboutcookies.org/internet-cookies-survey>, viewed on June 26, 2024.) *See also, e.g.*, How Americans protect their online data. (<https://www.pewresearch.org/internet/2023/10/18/how-americans-protect-their-online-data/>, viewed on June 27, 2024.) *See also*, Declaration of Dr. Andrew Stivers dated July 12, 2024 ("Stivers Declaration"), Section III.B.))

32. Moreover, even among individuals that express preferences for privacy, research indicates that there is a “privacy paradox,” or a significant gap between what individuals claim they prefer regarding privacy (i.e., stated preferences) and their actual behavior in terms of disclosing personal information or taking measures to safeguard their privacy (i.e., revealed preferences).<sup>75</sup> Consistent with that evidence, [REDACTED]

[REDACTED]  
[REDACTED]  
<sup>76</sup> An individualized, fact-specific inquiry into stated versus revealed preferences would be necessary to accurately measure the purported harm to each Class member.

33. Additionally, even among putative Class members who may prefer not to have personal data transmitted and used for certain purposes (such as being shown targeted advertising across websites), individualized inquiry would be required to determine whether each such putative Class member’s privacy preferences are implicated by the precise circumstances at issue here. Among other things, [REDACTED]

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<sup>75</sup> See Norberg, P. A. et al. (2007), The Privacy Paradox: Personal Information Disclosure Intentions versus Behaviors, The Journal of Consumer Affairs, Vol. 41, No. 1. See also, Adjerid, I. et al. (2018), Beyond the Privacy Paradox: Objective Versus Relative Risk in Privacy Decision Making, MIS Quarterly, Vol. 42, No. 2. See also, Stivers Declaration, Section III.A. This “privacy paradox” is also discussed in a piece of literature cited by Dr. Mangum. Specifically, a 2020 study by Garrett Johnson et al., “uncover[ed] a privacy paradox: consumers’ stated preferences overstate revealed preference measures of privacy.” (Garrett A. Johnson, Scott K. Shriver, and Shaoyin Du, “Consumer Privacy Choice in Online Advertising: Who Opted Out and at What Cost to Industry?” Marketing Science 39, No. 1, 2020, p. 34.) (Bracketed text added for clarification.)

<sup>76</sup> Watters Deposition, pp. 87 – 88 [REDACTED]  
See also, Watters Deposition pp. 153 – 154 [REDACTED]

(Bracketed text added for clarification.)

<sup>77</sup> Defendants TikTok Inc. and ByteDance Inc.’s Amended Responses and Objections to Plaintiffs’ Second Set of Interrogatories (Nos. 3 – 14) dated April 16, 2024, pp. 53 – 55.

[REDACTED] 78 [REDACTED]

[REDACTED] 79 [REDACTED]

[REDACTED] 80

34. Given that individuals' preferences regarding the transmission and use of data will vary across putative Class members on these multiple dimensions, it would not be reliable from an economic perspective to attempt to evaluate claimed economic injury to putative Class members on a Class-wide basis using common proof (i.e., without individualized inquiry and analysis of each putative Class member's preferences).

**C. Variation in Putative Class Members' Expectations and Awareness of Data Tracking and the Sharing of Data to Third Parties Such as TTI**

35. Individual putative Class members' expectations and awareness of data tracking and the transmission of data to third parties such as TTI may further affect the determination of whether an individual putative Class member suffered damages. From an economic perspective, putative Class members who were aware of websites' data collection and sharing with third parties such as TTI yet continued to use those websites without taking any action to protect their data have not necessarily suffered economic harm. This is because, from an economic perspective, such individuals have demonstrated that they either (a) were willing to share their data (i.e., lacked a preference not to share data with third parties) or (b) found the benefit of allowing such data sharing outweighs the cost. Thus, an individualized analysis of whether putative Class members did or did not take any action to protect their data after becoming aware of the potential for data transmission via, for example, the Pixel and Events API would be required to determine whether each putative Class member suffered economic harm.

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<sup>78</sup> Defendants TikTok Inc. and ByteDance Inc.'s Amended Responses and Objections to Plaintiffs' Second Set of Interrogatories (Nos. 3 – 14) dated April 16, 2024, pp. 55 and 59.

<sup>79</sup> Sahni Deposition, p. 237.

<sup>80</sup> Sahni Deposition, p. 180.

36. Numerous public sources are and have been available to inform putative Class members about the transmission and sharing of their personal data, and an individualized inquiry would be required to determine whether a putative Class member had been exposed to one or more of such sources, which include the following.

- a. Website Pop-Ups Regarding Sharing of Personal Information. Under the California Consumer Privacy Act (CCPA), California residents have the right to tell websites not to sell or share their personal information with third parties. After the enactment of CCPA in January 2020, websites started displaying “pop-ups” that inform users about their data sharing policies and give users the option to opt-out of sharing of cookies and personal information. The CCPA’s impact is directly relevant for Plaintiffs’ proposed California subclass, but I understand that the majority of websites made opt-out controls available to users regardless of their location.<sup>81</sup>
- b. Website Information from Browsers and Extensions. Many web browsers provide easy access to information about cookies detected on a website. Chrome users can install the “Pixel Helper” extension to identify whether an advertiser has installed the Pixel and what event data is being transmitted.<sup>82</sup>
- c. Website Privacy Policies Disclosing Sharing of Personal Information. TTI’s Terms require advertisers using the Pixel or Events API to provide the necessary transparency notices about transmitting data to TTI and to ask for the user’s consent when required.<sup>83</sup> Many websites that use the Pixel and Events API, including websites cited by Plaintiffs, disclose in their privacy policies that they collect and share personal data with third parties.<sup>84</sup>
- d. TTI Help Webpages. TTI’s Business Help Center discloses that the Pixel is a “piece of code that [an advertiser] can place on [its] website that allows [it] to share

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<sup>81</sup> IAB CCPA Benchmark Survey Summary. (<https://www.iab.com/insights/iab-ccpa-benchmark-survey>, viewed on June 25, 2024.) This survey finds that approximately 60% of businesses made these opt-out controls available to users “regardless of jurisdiction.”

<sup>82</sup> “Non-TikTok users can view what data is being sent about their use of a website by downloading the Pixel Helper Chrome extension, which identifies whether the Pixel is running on a certain page and what event data is being transmitted.” See Defendants TikTok Inc. and ByteDance Inc.’s Amended Responses and Objections to Plaintiffs’ Second Set of Interrogatories (Nos. 3 – 14) dated April 16, 2024, p. 63. See also, Troubleshoot with Pixel Helper. (<https://ads.tiktok.com/help/article/tiktok-pixel-helper-2.0?lang=en>, viewed on June 20, 2024.)

<sup>83</sup> Kirchgessner Deposition, pp. 222 – 224.

<sup>84</sup> See, e.g., Rite Aid Privacy Policy. (<https://www.riteaid.com/legal/privacy-policy>, viewed on June 19, 2024.) See also, Hulu Privacy Policy. (<https://press.hulu.com/privacy-policy/>, viewed on June 25, 2024.)

website events with TikTok”<sup>85</sup> It also discloses the types of information the Pixel collects.<sup>86</sup>

- e. Publicly Available Articles. Numerous new articles have discussed that online advertisers choose to transmit data through the Pixel and Events API. Examples are provided below.
  - i. In September 2022, Consumer Reports published an article discussing how advertisers can install the Pixel to transmit data to TTI. The article also indicates that advertisers transmit data about “people who don’t have TikTok accounts” and provides tips on how users can adjust the types of data that they share with advertisers.<sup>87</sup>
  - ii. In March 2023, the New York Post published an article informing readers that dozens of U.S. state governments installed the Pixel on their websites to transmit data to TTI.<sup>88</sup>
  - iii. In March 2023, The Verge published an article informing readers that a telehealth startup Cerebral shared patient data with TTI, Meta, Google, and other third-party advertisers via tracking pixels. The article also notes that “the exposed information could ‘vary’ from patient to patient depending on several factors, including ‘what actions individuals took on Cerebral’s Platforms.’”<sup>89</sup>

37. Because numerous public sources were (and are) available to inform putative Class members about advertisers’ potential transmission of their personal data via the Pixel and Events API, individualized inquiries would be required to determine whether putative Class members were in fact aware and, if so, whether they took any action to notify advertiser(s) they do not consent to transmission of their data or limit the data they provide. From an economic perspective, putative Class members who were aware of advertisers’ transmission of data to TTI yet continued

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<sup>85</sup> About TikTok Pixel. (<https://ads.tiktok.com/help/article/tiktok-pixel>, viewed on June 19, 2024.) (Bracketed text added for clarification.)

<sup>86</sup> About TikTok Pixel. (<https://ads.tiktok.com/help/article/tiktok-pixel>, viewed on June 19, 2024.)

<sup>87</sup> How TikTok Tracks You Across the Web, Even If You Don’t Use the App. (<https://www.consumerreports.org/electronics-computers/privacy/tiktok-tracks-you-across-the-web-even-if-you-dont-use-app-a4383537813/>, viewed on April 4, 2024.)

<sup>88</sup> TikTok is tracking data on dozens of state government websites: report. (<https://nypost.com/2023/03/21/tiktok-tracks-data-on-dozens-of-us-government-websites-report/>, viewed on June 25, 2024.)

<sup>89</sup> Cerebral admits to sharing patient data with Meta, TikTok, and Google. (<https://www.theverge.com/2023/3/11/23635518/cerebral-patient-data-meta-tiktok-google-pixel>, viewed on April 5, 2024.)

to use those websites without taking any action to potentially limit transmission of their data have revealed a willingness to share such data without monetary compensation and therefore a lack of economic harm from transmission.

**IX. LACK OF ECONOMIC EVIDENCE TO DETERMINE INDIVIDUAL PUTATIVE CLASS MEMBERS' ALLEGED ECONOMIC INJURY**

38. Even on an individual putative Class member basis, there likely would be a lack of economic evidence to allow a reliable determination of the claimed economic injury resulting from the alleged wrongful conduct. There is a lack of evidence to determine individual putative Class members' alleged economic injury at least because: (a) [REDACTED]

[REDACTED]  
[REDACTED]

[REDACTED]<sup>90</sup> Individualized inquiry and analysis of the types and amount of data transmitted for each putative Class member (which is no longer available) also would be required for a reliable assessment of claimed economic harm (if any), as discussed in **Section VIII**.

**X. DR. MANGUM DOES NOT OFFER A RELIABLE CLASSWIDE METHODOLOGY TO IDENTIFY ANY ALLEGED GAINS TO DEFENDANTS WITH A NEXUS TO PLAINTIFFS' THEORY OF LIABILITY**

39. As a threshold matter, it is my opinion that TTI's alleged unjust enrichment from the use of non-TikTok user data cannot be assessed reliably on a Class-wide basis using common proof. Even assuming that [REDACTED]

[REDACTED]<sup>91</sup> any Class-wide methodology for estimating that gain to Defendants must (a) isolate TTI revenue attributable to putative Class members (i.e.,

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<sup>90</sup> Defendants TikTok Inc. and ByteDance Inc.'s Amended Responses and Objections to Plaintiffs' Second Set of Interrogatories (Nos. 3 – 14) dated April 16, 2024, pp. 55 and 59.

<sup>91</sup> Mangum Declaration, pp. 19 – 21.

non-TikTok users) and (b) account for the inherent differences in what unmatched non-TikTok user data may have been used (if at all). Any calculation of TTI’s alleged unjust enrichment therefore requires individualized inquiries.

40. Dr. Mangum stated that “the remedy of unjust enrichment involves disgorgement of the revenue and related profits Defendants derived from the personal data they improperly collected from Class Members.”<sup>92</sup> Dr. Mangum presented two scenarios for his calculation of Defendants’ unjust enrichment, but his Declaration does not propose a reliable Class-wide methodology that properly accounts for the two necessary factors I describe above.

- a. In Scenario One, [REDACTED] Dr. Mangum concludes that he “may” have the ability “to quantify the economic value Defendants derive from the collection and/or use of Class Member data” based on information that he “expect[s]” to receive.<sup>93</sup>
- b. In Scenario Two, Dr. Mangum purportedly [REDACTED]

<sup>94</sup>

#### A. Dr. Mangum Does Not Offer a Methodology for Scenario One

41. I understand that Dr. Mangum has admitted that he is not currently offering a methodology for Scenario One.<sup>95</sup> He also testified that he does not have an opinion about whether a potential, yet-to-be-identified methodology could be applied the same way across all Class members.<sup>96</sup> Based on the lack of a methodology and the recognition that he cannot currently say whether a methodology could apply on a Class-wide basis, I therefore do not address it at this time.

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<sup>92</sup> Mangum Declaration, p. 18.

<sup>93</sup> Mangum Declaration, pp. 19 – 20. (Bracketed text added for clarification.)

<sup>94</sup> Mangum Declaration, pp. 20 – 21 and 31.

<sup>95</sup> Deposition of Russell W. Mangum, III, Ph.D. taken July 3, 2024 (“Mangum Deposition”), pp. 147 – 148.

<sup>96</sup> Mangum Deposition, pp. 148 – 149.

**B. Dr. Mangum's Scenario Two Is Not Tied in Any Way to Putative Class Members (Nor the Receipt of Putative Class Members' Data)**

42. In his Scenario Two, Dr. Mangum claimed that [REDACTED]

[REDACTED]

[REDACTED] <sup>97</sup> Thus, Dr. Mangum concluded that [REDACTED]

[REDACTED] and that disgorgement can be measured Class-wide simply by calculating [REDACTED] <sup>98</sup>

43. Dr. Mangum's conclusion that the appropriate starting point for evaluation of TTI's claimed unjust enrichment is [REDACTED] is wrong for several reasons. He has not shown [REDACTED] has *any* relationship to any proposed Class or sub-Class or Plaintiffs' theory of liability – and in fact, it does not. Dr. Mangum attempts to establish a causal link between the “value of non-TikTok user data” and “the value” or [REDACTED]

[REDACTED]

[REDACTED] <sup>99</sup> It appears that Dr. Mangum's sole basis for this [REDACTED]

[REDACTED]

[REDACTED]

<sup>100</sup>

[REDACTED]

[REDACTED]

...

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<sup>97</sup> Mangum Declaration, p. 21.

<sup>98</sup> Mangum Declaration, p. 21.

<sup>99</sup> Mangum Declaration, pp. 21 and 31.

<sup>100</sup> Li Deposition, pp. 214 – 215. *See also*, Mangum Declaration, p. 21. (Bracketed text added for clarification.)

44. Contrary to Dr. Mangum's characterization, [REDACTED]

<sup>101</sup> Indeed, it makes sense that [REDACTED]

101 [REDACTED] (Li Deposition, p. 36.) (Bracketed text added for  
clarification.) See also, Defendants TikTok Inc. and ByteDance Inc.’s Amended Responses and Objections to Plaintiffs’ Second Set of Interrogatories (Nos. 3 – 14) dated April 16, 2024, pp. 53 – 55.

45. Dr. Mangum does not otherwise consider or address – and his models do not consider – [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] <sup>102</sup> is flawed and misleading and does not provide *any* indication of the [REDACTED]

46. Dr. Mangum further fails to consider or address—and his models do not consider—

[REDACTED]  
[REDACTED] Indeed, Dr. Mangum’s models ignore entirely [REDACTED]  
[REDACTED]  
[REDACTED]

**XI. DR. MANGUM’S RESTITUTIONARY DAMAGES ARE UNRELIABLE AND DO NOT MEASURE THE MARKET VALUE OF NON-TIKTOK USERS’ DATA FOR ANY IDENTIFIED USE OF SUCH DATA IN THIS MATTER**

47. Dr. Mangum presents, “as an alternative to the unjust enrichment remedy,” calculations of alleged “actual or restitutionary damages,” which he claims “can be determined as a form of payments necessary to compensate for the market value of the information allegedly wrongfully collected from [putative Class members].”<sup>103</sup> Dr. Mangum uses “various market measures of the economic market value of privacy and the economic value of personal

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<sup>102</sup> Mangum Declaration, p. 21.

<sup>103</sup> Mangum Declaration, p. 36. (Bracketed text added for clarification.)

information” to purportedly “determine the economic value” of putative Class members’ data and “show that the appropriate restitutionary damage methodology is consistent across [putative Class members]” and “uniform per user regardless of the total amount of data collected.”<sup>104</sup> However, Dr. Mangum’s restitutionary damages are unreliable and his market-based measures do not capture the market value of non-TikTok users’ data. Moreover, due to the inapplicability of these “market measures” to the current matter, Dr. Mangum has failed to demonstrate that his restitutionary damage methodology is consistent across putative Class members.

**A. Dr. Mangum’s Market-Based Measures of Companies Placing a Market Value on Collection of User Data Is Not Relevant to the Market Value (if Any) of Non-TikTok Users’ Data**

48. According to Dr. Mangum, a relevant comparison for the allegations in this matter are “market measures” where “companies affirmatively pay users for their data.”<sup>105</sup> Dr. Mangum identified three such claimed market measure: Ipsos Screenwise used by Google (“Screenwise”), Nielsen, and SavvyConnect (“market research companies”) and concluded that non-TikTok users’ data is “most consistent and economically comparable with the SavvyConnect and Screenwise programs.”<sup>106</sup> As an initial matter, I understand, based on the Schnell Declaration, that the data collected by Screenwise and SavvyConnect are not comparable to the data advertisers transmit to TTI.<sup>107</sup> According to Mr. Schnell, Screenwise and SavvyConnect collect comprehensive data (i.e., all internet activity for Screenwise and all web browsing for SavvyConnect) for a pre-identified

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<sup>104</sup> Mangum Declaration, pp. 36 – 37 and 45. (Bracketed text added for clarification.)

<sup>105</sup> Mangum Declaration, p. 45.

<sup>106</sup> Mangum Declaration, pp. 40 – 41, 43, and 47.

<sup>107</sup> Schnell Declaration, Section XI.

individual (across all devices, at least for Screenwise), while the data TTI receives is only from websites with the Pixel and Events API properly installed.<sup>108, 109</sup>

49. Additionally, contrary to Dr. Mangum's opinion, his claimed market measures are not relevant to the market value (if any) of non-TikTok users' data for at least the reasons discussed below, rendering his claimed methodology entirely unreliable for Class-wide resolution of restitutionary damages.

i. *Monetization Strategy*

50. The monetization strategies associated with the collection of the data in the Screenwise, Nielsen, and SavvyConnect programs are tied to advertising revenues (e.g., targeted ads as a result of the transmitted data) whereas this is not applicable to non-TikTok users' data. These market research companies use participants' data to improve their own or their clients' products, including advertisement products, as described below.

- a. Screenwise. Dr. Mangum ignores his own statement that “[Screenwise] information allows Google to better understand how users interact with its own products.”<sup>110</sup> Google discloses that it uses Screenwise data in combination with the participants' data from other Google products and services (which is used to make a profile for each participant)<sup>111</sup> “to provide, maintain, and improve [Google products], and to develop new ones,” including “to conduct analytics and measurement to understand how our services are used, as well as conduct ads-related market research” and “to improve Google products such as Search, Android, YouTube and Google Assistant.”<sup>112</sup>
- b. Nielsen. Nielsen states in its U.S. Panel Privacy Notice Summary that it uses the data “to perform market research and prepare reports and analyses for [its] clients”

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<sup>108</sup> Schnell Declaration, Section XI.

<sup>109</sup> I note that Dr. Mangum concluded that the market value of the putative Class members' data “is most consistent and economically comparable with the SavvyConnect and Screenwise programs.” Dr. Shafiq concluded that the data collected by Google in Screenwise is comparable to data advertisers transmit to TTI via the Pixel but did not provide an opinion for SavvyConnect. (Mangum Declaration, p. 47. *See also*, Shafiq Declaration, p. 59.)

<sup>110</sup> Mangum Declaration, p. 41. (Bracketed text added for clarification.)

<sup>111</sup> Ipsos Screenwise Panel Privacy Policy, p. 3. (Mangum Deposition, Exhibit 228.)

<sup>112</sup> Google Panel Privacy Policy. (<https://support.google.com/screenwise-meter/answer/9744317?hl=en>, viewed on July 1, 2024.)

with the goal of “help[ing] them make informed decisions on various topics, such as where and how to advertise their products and services to consumers.”<sup>113</sup> Its quarterly filing notes that “Nielsen’s data is used by its marketer and advertiser agency clients to plan and optimize their spend and is used by its content creator clients to inform decisions and identify trends.”<sup>114</sup> Nielsen’s revenue is “primarily generated from...measurement services and analytics, which are used by...the Company’s advertising clients to plan and optimize their spending.”<sup>115</sup>

- c. SavvyConnect. Similarly, SavvyConnect “use[s] the information [it] collect[s] through [its] software to identify online trends and [it] share[s] this information with [its] customers and partners.”<sup>116</sup> The information collected by SavvyConnect “is combined with data from other people” and “is then provided to organizations that use it for product development, insights into purchase behavior, and other uses.”<sup>117</sup> SavvyConnect is provided by Luth Research which uses “behavior tracking capabilities combined with [its] proprietary data collection approaches...to deliver insights that propel [its] clients ahead of their competition.”<sup>118</sup>

51. [REDACTED]

[REDACTED] 119 [REDACTED]  
[REDACTED]

[REDACTED]<sup>120</sup> On the other hand, it is easy for at least Screenwise and SavvyConnect to tie the data collected to a particular person because it is collected all at once for a registered user of those services.<sup>121</sup> As I noted above, Screenwise and Nielsen pay for the collection of user information,

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<sup>113</sup> Nielsen U.S. Panel Privacy Notice Summary. ([https://computermobilepanel.nielsen.com/ui/US/en/privacypolicy\\_en.html#dataretention](https://computermobilepanel.nielsen.com/ui/US/en/privacypolicy_en.html#dataretention), viewed on July 2, 2024.) (Bracketed text added for clarification.)

<sup>114</sup> Nielsen Holdings PLC Form 10-Q for the quarterly period ended June 30, 2022, p. 11.

<sup>115</sup> Nielsen Holdings PLC Form 10-Q for the quarterly period ended June 30, 2022, p. 13.

<sup>116</sup> Survey Savvy Privacy Policy. (<https://surveysavvy.com/privacy-policy/>, viewed on July 2, 2024.) (Bracketed text added for clarification.)

<sup>117</sup> Share Your Thoughts and Data. (<https://www.savvyshares.com/how-it-works/>, viewed on July 11, 2024.)

<sup>118</sup> Luth Research: About. (<https://luthresearch.com/about/>, viewed on July 11, 2024.) See also, What is SavvyConnect? (<https://surveysavvy.com/savvyconnect/>, viewed on July 11, 2024.) (Bracketed text added for clarification.)

<sup>119</sup> Defendants TikTok Inc. and ByteDance Inc.’s Amended Responses and Objections to Plaintiffs’ Second Set of Interrogatories (Nos. 3 – 14) dated April 16, 2024, pp. 55 and 59.

<sup>120</sup> Sahni Deposition, pp. 237 – 238.

<sup>121</sup> Schnell Declaration, Section XI.

in part, to understand and improve the effectiveness of advertising campaigns. Hence, Dr. Mangum's comparison of the value of data for non-TikTok users [REDACTED] [REDACTED] to the value of data collected on Screenwise, Nielsen and SavvyConnect (which is used for ad monetization) is fatally flawed.

*ii. Claimed Uniform Value of Data*

52. Dr. Mangum states that “the market values [of user data] are uniform per user regardless of the total amount of data collected.”<sup>122</sup> However, Dr. Mangum does not account for important details about the participation and rewards of Screenwise, Nielsen, and SavvyConnect, which contradict his claim of uniform payments.

- a. Screenwise. With respect to Screenwise, Google offered an option for participants to add a browser extension “that will share with Google the sites you visit and how you use them” and also an option for participants to “install a piece of hardware on their network to do more extensive monitoring [compared to the browser extension].”<sup>123</sup> Google offered the participants with the browser extension a \$5 Amazon gift card for signing up and another \$5 gift card for every three months they stayed with the program, while participants who installed the hardware (and had more extensive monitoring) were offered \$100 to sign up and \$20 for every month the device was installed for up to a year’s time.<sup>124</sup> Additionally, rewards varied based on the number of devices with a browser extension installed. Specifically, an article from 2020 describing Screenwise reported that the weekly incentive paid to participants was \$1.00 for a computer only, \$1.50 for a computer and either a smartphone or tablet, and \$2.00 for a computer, smartphone, and tablet.<sup>125</sup> Dr. Mangum did not address the differences in the amount participants would receive, nor that the program was willing to pay a larger amount for “more extensive monitoring,” which undermines his claim that payments were

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<sup>122</sup> Mangum Declaration, p. 45. (Bracketed text added for clarification.)

<sup>123</sup> Google Paying Users to Track 100% of Their Web Usage via Little Black Box. (<https://arstechnica.com/gadgets/2012/02/google-paying-users-to-track-100-of-their-web-usage-via-little-black-box/>, viewed on July 10, 2024.) (Bracketed text added for clarification.)

<sup>124</sup> Google Paying Users to Track 100% of Their Web Usage via Little Black Box. (<https://arstechnica.com/gadgets/2012/02/google-paying-users-to-track-100-of-their-web-usage-via-little-black-box/>, viewed on July 10, 2024.)

<sup>125</sup> Dr. Mangum also acknowledged that monthly rewards varied depending on the number and type of devices with the Screenwise browser extension or app installed. (Screenwise Meter Panel Review. (<https://lushdollar.com/the-screenwise-meter-panel/>, viewed on July 10, 2024.) See also, Mangum Declaration, p. 42.)

“uniform.”<sup>126</sup> Dr. Mangum also did not address the fact that Google’s terms of service for Screenwise do not include any provision providing Google an exclusive license to the data shared and in fact contemplate the parallel collection of data by other third-parties by noting that Screenwise will track other cookies on participants’ devices.<sup>127</sup>

- b. Nielsen. Dr. Mangum misrepresented the Nielsen payment as uniform when in fact Nielsen states on its website that participants can earn “up to \$60” per year in reward points, redeemable via PayPal and gift cards.<sup>128</sup> Points are added to the participants account monthly and there must be account activity on the registered device for points to accrue.<sup>129</sup> Nielsen awards redeemable points each month depending on the number of devices connected and actively used, and users cannot redeem more than \$60 worth of points per year.<sup>130</sup>
- c. SavvyConnect. SavvyConnect pays \$3 per each connected and actively used device from its participants.<sup>131</sup> Specifically, Savvy states on its webpage that participants can “get more with each device [] by installing our SavvyConnect app on [their] computer, smartphone, and/or tablet.”<sup>132</sup> In order to receive payment (i.e., earn monthly incentives), SavvyConnect requires that participants “frequently us[e] the devices with SavvyConnect installed” and SavvyConnect “must receive at least 7 days of actual usage data (per device) per calendar month.”<sup>133</sup>

53. Moreover, in his determination of a claimed uniform market value, Dr. Mangum excludes other market research companies that pay different amounts based on the amount and

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<sup>126</sup> Google Paying Users to Track 100% of Their Web Usage via Little Black Box. (<https://arstechnica.com/gadgets/2012/02/google-paying-users-to-track-100-of-their-web-usage-via-little-black-box/>, viewed on July 10, 2024.)

<sup>127</sup> Google Panel Privacy Policy. (<https://support.google.com/screenwise-meter/answer/9744317?hl=en>, viewed on July 1, 2024.)

<sup>128</sup> As discussed in the Mangum Declaration, in 2023 the Nielsen panel offered up to \$50 per year in rewards to participants and in 2024, up to \$60 per year in rewards. (Nielsen Computer & Mobile Panel. (<https://computermobilepanel.nielsen.com/ui/US/en/sdp/landing>, viewed on July 9, 2024.) See also, Mangum Declaration, pp. 43 and 46.

<sup>129</sup> Nielsen Computer and Mobile Panel Review. (<https://www.thewaystowealth.com/reviews/n Nielsen-computer-and-mobile-panel-review/>, viewed on July 11, 2024.)

<sup>130</sup> Nielsen Computer & Mobile Panel. Frequently Asked Questions. (<https://computermobilepanel.nielsen.com/ui/US/en/faqen.html>, viewed on July 11, 2024.) See also, Get Paid For Your Data | 11 Best Data Collection Apps for 2024. (<https://millennialmoneyman.com/get-paid-for-your-data/>, viewed on July 9, 2024.)

<sup>131</sup> SavvyConnect Monthly Participation Requirements. (<https://surveysavvy.com/savvyconnect-requirements/>, viewed on July 10, 2024.)

<sup>132</sup> SurveySavvy. Get more with our app. (<https://surveysavvy.com/>, viewed on July 9, 2024.) (Bracketed text added for clarification.)

<sup>133</sup> SavvyConnect Monthly Participation Requirements. (<https://surveysavvy.com/savvyconnect-requirements/>, viewed on July 10, 2024.) (Bracketed text added for clarification.)

types of collected user data. For example, the online platform Reklaim states on its website that “the more you share, the more you earn,” with users earning more redeemable points if they choose to share different categories of data, including profile information, device information, and order (online shopping) information.<sup>134</sup>

*iii. Amount and Type of Data*

54. Dr. Mangum dismisses the significant differences in the amount and types of data transmitted to TTI by the Pixel and Events API on non-TikTok users as compared to data collected by Screenwise, Nielsen, and SavvyConnect. Some types of data (e.g., basic age, gender, and location information) sell for almost nothing while other types of data (e.g., medical or financial records) sell for more.<sup>135</sup> Dr. Mangum’s method for Class-wide resolution of restitutionary damages does not allow for any such variation across the types of data transmitted, nor do his claimed market measures address such differences.<sup>136</sup> **Exhibit 1** provides a summary of the attributes and data collected by Screenwise, Nielsen, and SavvyConnect. These companies collect identifying and demographic information (which, by definition, is already matched to those individuals) for *all* users upon their registration, including name, phone number, email address, gender, race and/or ethnicity, employment status and/or occupation, and address.<sup>137</sup> By contrast,

[REDACTED]

[REDACTED]

[REDACTED] <sup>138</sup> Additionally, while advertisers transmit only coarse location information

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<sup>134</sup> How to earn money online. Reklaim. (<https://www.reklaimyours.com/how-to-earn>, viewed on July 9, 2024.)

<sup>135</sup> Companies scramble for consumer data. (<https://www.ft.com/content/f0b6edc0-d342-11e2-b3ff-00144feab7de>, viewed on July 4, 2024.) *See also*, Skatova, A. et al. (2019), Unpacking Privacy: Willingness to pay to protect personal data, pp. 1 – 42, at p. 20. (<https://osf.io/preprints/psyarxiv/ahwe4>, viewed on June 28, 2024.)

<sup>136</sup> Mangum Deposition, pp. 83 – 84.

<sup>137</sup> *See Exhibit 1.*

<sup>138</sup> Sahni Deposition, p. 184.

based on the IP address to TTI, the market research companies collect precise location information on their participants using GPS signals from their devices or user-provided home or mailing addresses.<sup>139</sup>

55. In terms of browsing activity, Screenwise, Nielsen, and SavvyConnect collect almost all in-browser activity on participants' devices for the specified time period, including the URL, cookies, browsing history, user actions and information entered on websites, and information and content on websites.<sup>140</sup> TTI, on the other hand, receives information only from advertisers using the Pixel or Events API, and [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED] Screenwise records all activity on the participant's device, including content of the user's screen at any time, data associated to clicks and taps on a screen, use of telephone, email, SMS, and instant messaging, information from motion, environmental, and position sensors on a device, information on wi-fi networks, data usage, and Bluetooth devices used, and system information, including crashes, use of airplane mode, battery, and storage.<sup>142</sup>

56. While Dr. Mangum correctly notes that the market research companies create aggregated reports for their clients, they may also store and use data in disaggregated form to contact participants and inform their decisions. For example, the Screenwise Privacy policy notes

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<sup>139</sup> About TikTok Pixel. (<https://ads.tiktok.com/help/article/tiktok-pixel>, viewed on June 19, 2024.) *See also, Exhibit 1.*

<sup>140</sup> *See Exhibit 1.*

<sup>141</sup> *See Section VII.* *See also,* About TikTok Pixel. (<https://ads.tiktok.com/help/article/tiktok-pixel>, viewed on June 19, 2024.)

<sup>142</sup> Google Panel Privacy Policy. (<https://support.google.com/screenwise-meter/answer/9744317?hl=en>, viewed on July 1, 2024.)

that “Ipsos will share all Personal Data with Google” and that “Ipsos will use [participant’s] Survey Data to...keep a record of all Panelists...send [participants] invitations to participate in surveys [and,] send [participants] by email newsletters, announcements and other communications.”<sup>143</sup>

**B. Dr. Mangum’s Restitutionary Damages Opinion Does Not Account for Variations Across Putative Class Members**

57. Dr. Mangum proposes to calculate restitutionary damages for each putative Class member by multiplying a single measure of the value of non-TikTok users’ data (“Market Measure”) by the number of months (“No. of Months”) and a weighting factor (either 100% or 9.7%, based on the estimated share of websites using the Pixel and Events API (“Weighting”).<sup>144</sup>

$$\text{Single Class Member Damages} = \text{Market Measure} * \text{No. of Months} * \text{Weighting (X\%)}$$

58. Dr. Mangum’s formula must – but does not – account for significant variations across putative Class members. Specifically, as discussed in **Section VIII**, individualized inquiry would be required to determine whether and to what extend a putative Class member was harmed due to the alleged wrongful conduct at least because (a) the type and amount of data advertisers transmit about the putative Class members vary, (b) putative Class members’ preferences regarding collection of personal data may vary, and (c) putative Class members’ expectations and awareness of data tracking likely varies.<sup>145</sup>

59. Indeed, Dr. Mangum did not perform an analysis of the sample data produced by TTI or acknowledge [REDACTED]

[REDACTED]

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<sup>143</sup> Ipsos Screenwise Panel Privacy Policy. (<https://screenwisepanel.com/ipsos-Sow-privacy-policy>, viewed on July 2, 2024.) (Bracketed text added for clarification.)

<sup>144</sup> Mangum Declaration, p. 49.

<sup>145</sup> See **Section VIII**.

[REDACTED]<sup>146, 147</sup> Specifically, Dr. Mangum did not acknowledge Dr. Shafiq's purported findings [REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED]<sup>148, 149</sup> Dr. Mangum's proposed formula for restitutionary damages does not account for this significant variation in the types of data collected, [REDACTED]

[REDACTED]<sup>150</sup>

60. Dr. Mangum's usage of a uniform "market measure," derived from an analysis of data sets that may vary in comparability with any given Class member on an individual basis, and his incorporation of "number of months" as a proxy for the amount of data shared, are particularly problematic. Neither purport to have any relation to the actual damages any given Class member incurred as a result of the transmission or purported usage of their data. The degree to which the transmission and purported usage of any Class member's data, including the amount and nature of data transmitted, will necessarily vary on an individual basis as compared to the Screenwise and

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<sup>146</sup> Shafiq Declaration, pp. 58 – 59.

<sup>147</sup> [REDACTED] (Shafiq Declaration, pp. 58 – 59.) [REDACTED]  
and 218 – 219.) [REDACTED] (Shao Deposition, pp. 199

<sup>148</sup> [REDACTED]

[REDACTED] (Shafiq Declaration pp. 58 – 59.)

<sup>149</sup> [REDACTED]

[REDACTED] (Shafiq Declaration, pp. 24 – 33. See also, Mangum Declaration, p. 10.)

<sup>150</sup> [REDACTED]

[REDACTED] (Shafiq Declaration, p. 59.)

SavvyConnect models on which the “market measure” is based. Any given user would also have differing amounts and types of data sent back to TTI in different months. Dr. Mangum’s formula does not attempt to account for these significant differences.

## **XII. DR. MANGUM DOES NOT OFFER ANY RELIABLE CALCULATION OF CLASSWIDE STATUTORY DAMAGES**

61. I understand that CIPA provides for either statutory damages of \$5,000 or treble actual damages<sup>151</sup> while ECPA provides for either the sum of actual damages and any profits made by the violator as a result of the violation or the greater of \$100 per day per violation or \$10,000.<sup>152</sup> Dr. Mangum claims that “a starting point for the definition of a violation could be the number of Class Members (or the number of members in the other subclasses)” but that a “violation is a concept that could even be applied as broadly as every time the Pixel fires for a website visited by a Class Member.”<sup>153</sup>

62. I understand that Dr. Mangum is not offering an opinion about whether statutory damages is an appropriate methodology for assessing all damages across all Class members with respect to CIPA or ECPA. However, Dr. Mangum’s discussion of statutory damages fails to provide a Class-wide methodology as it fails to account for putative Class members’ ability to elect for either actual or statutory damages, which I understand is afforded to putative Class members, the former of which would require individualized inquiries as discussed in **Section VIII**. That is a threshold inquiry that Dr. Mangum cannot bypass to assert that calculating statutory damages would be a simple calculation that could be done for each Class member.

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<sup>151</sup> Cal. Pen. Code § 637.2.

<sup>152</sup> 18 U.S.C. § 2520(c).

<sup>153</sup> Mangum Declaration, p. 50.

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63. My analyses and opinions contained in this declaration are based on information available as of the date of my declaration. I reserve the ability to review documents, deposition transcripts, or other information still to be produced by the parties to this dispute and to supplement my opinions based on that review, if necessary.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct to the best of my knowledge. Executed this 12th day of July, 2024, in Dallas, Texas.



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Lauren R. Kindler

## APPENDIX A

### LAUREN R. KINDLER Managing Principal

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Dallas, TX 75219

Ms. Kindler is an economist with extensive experience in a variety of engagements, including intellectual property disputes, contract disputes, litigation matters related to securities and finance, false advertising allegations, and antitrust matters. Ms. Kindler has testified numerous times in deposition, trial, and arbitration and assisted in all phases of the litigation process, including discovery, expert reports, deposition, and trial preparation. With respect to intellectual property disputes, Ms. Kindler has evaluated damages in the context of allegations of patent infringement, trade secret misappropriation, trade dress infringement, and copyright infringement. In patent infringement matters, Ms. Kindler has analyzed claimed lost sales, claimed lost profits, and reasonable royalty damages. Ms. Kindler also has evaluated disgorgement and actual harm in the context of numerous intellectual property disputes. Ms. Kindler has been involved in numerous licensing negotiations relating to a wide range of technologies and products, including but not limited to standard essential technology, software, smartphone and wireless technologies, dental implants, and oil and gas. In antitrust matters, she has assessed the competitive consequences of mergers, analyzed the competitive behavior of market participants, estimated the impact of market power, and evaluated damages. Her work has also included the development of complex damages models, the analysis of statistical data, and the analysis of stock price movements. Prior to joining Analysis Group, Ms. Kindler held positions with two economics consulting firms.

### EDUCATION

2006 M.A., economics, Southern Methodist University

1995 B.A., economics (*cum laude*), Tulane University

### PROFESSIONAL EXPERIENCE

2000–Present Analysis Group, Inc.

1998–1999 National Economic Research Associates, Inc. (NERA)

1996–1998 The Brattle Group

### SELECTED EXPERT CASEWORK

#### ▪ *InQuisient Inc. v. ServiceNow, Inc.*

*US District Court, District of Delaware*

Retained as an expert witness for ServiceNow to evaluate InQuisient's royalty damages resulting from ServiceNow's alleged infringement of InQuisient's patents relating to a specific means of manipulating and storing data in a database. Testified in deposition. (2024)

▪ ***Provisur Technologies, Inc. v. Weber Inc., et al.***

*US District Court, Western District of Missouri*

Retained as an expert witness for Weber to evaluate damages resulting from Provisur's alleged infringement of certain Weber patents relating to meat slicing equipment and, with respect to Provisur's counterclaims, to evaluate damages resulting from Weber's alleged infringement of Provisur patents relating to meat slicing equipment. Evaluated Weber's reasonable royalty damages and Provisur's reasonable royalty damages. Testified in deposition. (2024)

▪ ***Valmarc Corporation v. Nike, Inc. and Converse, Inc.***

*US District Court, District of Oregon*

Retained as an expert witness for Valmarc to evaluate damages resulting from Nike and Converse's alleged misappropriation of Valmarc's trade secrets relating to Valmarc's anticontroling system and Converse's alleged breach of contract. Testified in deposition. (2024)

▪ ***Acceleration Bay, LLC v. Amazon Web Services, Inc.***

*US District Court, District of Delaware*

Retained as an expert witness for Amazon Web Services to evaluate Acceleration Bay's royalty damages resulting from Amazon Web Services' alleged infringement of Acceleration Bay patents by certain Amazon Web Services' services relating to computer networking connections. Testified in deposition. (2024)

▪ ***Lindt & Sprüngli (North America) Inc., et al, v. GXO Warehouse Company, Inc.***

*US District Court, Western District of Missouri*

Retained as an expert witness for GXO to evaluate Lindt's claimed damages associated with GXO's alleged failure to properly operate a warehouse in Tracy, California, alleging breach of contract, negligence, and fraud. Testified in deposition and trial. (2024)

▪ ***Seven Networks, LLC v. Motorola Mobility LLC***

*US District Court, Northern District of Texas*

Retained as an expert witness for Motorola Mobility to evaluate royalty damages resulting from its alleged infringement of certain patents relating to systems and methods to reduce network activity in order to improve the battery life of mobile devices. Testified in deposition. (2024)

▪ ***IOENGINE, LLC v. Roku, Inc.***

*US District Court, Western District of Texas*

Retained as an expert witness for Roku to evaluate damages resulting from its alleged infringement of certain patents relating to Roku's streaming players. Testified twice in deposition and in trial. (2024)

▪ ***Bold Limited and Bold LLC v. Rocket Resume, Inc. and Stephen Zimmerman***

*US District Court, Northern District of California*

Retained as an expert witness for Rocket Resume and Stephen Zimmerman to evaluate Bold's damages resulting from Defendants' alleged copyright infringement in connection with Defendants' rocket-resume.com website. Testified in deposition. (2024)

▪ ***Netlist, Inc. v. Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Semiconductor, Inc.***

*US District Court, Eastern District of Texas*

Retained as an expert witness for Samsung to evaluate Netlist's damages resulting from Samsung's alleged infringement of Netlist's patents by certain dynamic random access memory ("DRAM") products, including DDR4 RDIMMs and LRDIMMs. Testified in deposition. (2024)

- **LKQ Corporation, and Keystone Automotive Industries, Inc. v. Kia America, Inc., and Kia Corporation.**  
*US District Court, Northern District of Illinois*  
Retained as an expert witness for Kia to evaluate LKQ's damages resulting from Kia's alleged infringement of certain LKQ design patents by certain head lamps, rear lamps, and rear combination lamps for Kia vehicles or automobiles. Testified in deposition. (2024)
- **NextGen Innovations, LLC v. AT&T Services, Inc. and AT&T Corp.**  
*US District Court, Eastern District of Texas*  
Retained as an expert witness for AT&T to evaluate NextGen's damages resulting from AT&T's alleged infringement of NextGen's patents by certain optical network components within its fiber optic network. Testified in deposition. (2024)
- **Impinj, Inc., v. NXP USA, Inc., NXP B.V., and NXP Semiconductors Netherlands B.V.**  
*US District Court, Western District of Texas*  
Retained as an expert witness for Impinj to evaluate damages resulting from NXP's alleged infringement of certain patents relating to RAIN RFID technology and, with respect to NXP's counterclaims, to evaluate damages resulting from Impinj's alleged infringement of NXP patents relating to RAIN RFID technology. Evaluated Impinj's lost profits and reasonable royalty damages and NXP's lost profits and reasonable royalty damages. Testified in deposition and trial. (2023)
- **PureWick Corporation v. Sage Products, LLC**  
*US District Court, Delaware*  
Retained as an expert witness for PureWick to evaluate damages resulting from Sage's alleged infringement of the Patents-in-Suit relating to the PrimaFit 2.0 external urine management system for females. Testified in deposition. (2023)
- **Paltalk Holdings, Inc. v. Cisco Systems, Inc.**  
*US District Court, Western District of Texas*  
Retained as an expert witness for Cisco to evaluate Paltalk's damages associated with Cisco's alleged infringement of Paltalk's patented audio mixing and multiplexing technology in audio conferencing products and systems. Testified in two depositions. (2023)
- **U.S. Well Services, Inc. v. Halliburton Energy Services, Inc. et al.**  
*US District Court, Western District of Texas*  
Retained as an expert witness for Halliburton to evaluate Halliburton's damages associated with USWS's alleged infringement of Halliburton's patents and evaluate USWS's claimed damages associated with Halliburton's alleged infringement of USWS's patents. Testified in deposition and trial. (2023)
- **Yuga Labs, Inc. v. Ryder Ripp and Jeremy Cahen**  
*US District Court, Central District of California*  
Retained as an expert witness for Yuga Labs to evaluate damages resulting from Defendants' alleged infringement of Yuga Labs' trademarks and alleged false advertising associated with its RR/BAYC NFTs. Testified in deposition and trial. (2023)
- **VLSI Technology LLC v. Intel Corporation**  
*US District Court, Northern District of California*  
Retained as an expert witness for Intel to evaluate damages resulting from its alleged infringement of certain patents relating to microprocessor products. Testified in deposition. (2023)

▪ ***Impinj, Inc. v. NXP USA, Inc.***

*US District Court, Northern District of California*

Retained as an expert witness for Impinj to evaluate damages resulting from NXP's alleged infringement of certain patents relating to RAIN RFID technology. Evaluated Impinj's lost profits and reasonable royalty damages. Testified in deposition and trial. (2023)

▪ ***CloudofChange, LLC v. Lightspeed POS, Inc.***

*US District Court, Western District of Texas*

Retained as an expert witness for Lightspeed to evaluate damages resulting from its alleged infringement of certain patents relating to point of sale (POS) systems. Testified in deposition. (2023)

▪ ***NXP USA, Inc. and NXP B.V. v. Impinj, Inc.***

*US District Court, Western District of Washington*

Retained as an expert witness for Impinj to evaluate damages resulting from Impinj's alleged infringement of certain patents relating to RAIN RFID technology. Evaluated NXP's lost profits and reasonable royalty damages claim. Testified in deposition and trial. (2023)

▪ ***Utherverse Gaming LLC v. Epic Games, Inc.***

*US District Court, Western District of Washington*

Retained as an expert witness for Epic to evaluate damages resulting from its alleged infringement of Utherverse Gaming patents relating to hosting virtual events on the online video game Fortnite. Testified in deposition. (2023)

▪ ***Envirotainer AB v. DoubleDay Acquisitions LLC d/b/a CSafe Global***

*US Patent and Trademark Office – PTAB*

Retained as an expert witness for Envirotainer to evaluate commercial success attributable to CSafe's Challenged Patents relating to VIP technology for use in active air cargo containers. Testified in two depositions. (2023)

▪ ***Au New Haven, et al. v. YKK Corporation, et al.***

*US District Court, Southern District of New York*

Retained as an expert witness for YKK to evaluate the plaintiffs' claimed damages resulting from YKK's alleged breach of the parties' exclusive license agreement (related to sales allegedly made into unlicensed fields) and alleged infringement of the plaintiffs' patents relating to polyurethane-laminated zippers. Testified two times at deposition. (2017 and 2023)

▪ ***Regents of the University of Minnesota v. Sprint Solutions, Inc. and Sprint Spectrum, L.P. et al.***

*US District Court, Minnesota*

Retained as an expert witness for Sprint to evaluate damages resulting from its alleged infringement of certain patents relating to 4G LTE wireless service using base station equipment and software provided by Intervenors. Testified in deposition. (2023)

- ***Regents of the University of Minnesota v. Celco Partnership d/b/a Verizon Wireless et al.***  
*US District Court, Minnesota*  
Retained as an expert witness for Verizon to evaluate damages resulting from its alleged infringement of certain patents relating to 4G LTE and/or 5G NR wireless service using base station equipment and software provided by Intervenors. Testified in deposition. (2023)
- ***Regents of the University of Minnesota v. T-Mobile USA, Inc. et al.***  
*US District Court, Minnesota*  
Retained as an expert witness for T-Mobile to evaluate damages resulting from its alleged infringement of certain patents relating to 4G LTE and/or 5G NR wireless service using base station equipment and software provided by Intervenors. Testified in deposition. (2023)
- ***Regents of the University of Minnesota v. AT&T Mobility LLC et al.***  
*US District Court, Minnesota*  
Retained as an expert witness for AT&T to evaluate damages resulting from its alleged infringement of certain patents relating to 4G LTE and/or 5G NR wireless service using base station equipment and software provided by Intervenors. Testified in deposition. (2023)
- ***Carolyn W. Hafeman v. LG Electronics, Inc.***  
*US District Court, Western District of Texas*  
Retained as an expert witness for LG to evaluate damages resulting from LG's alleged infringement of certain patents relating to specific features of Find My Device. Testified in deposition and trial. (2023)
- ***VoIP-PAL.com, Inc. v. Amazon, Inc. et al.***  
*US District Court, Western District of Texas*  
Retained as an expert witness for Amazon to evaluate damages resulting from its alleged infringement of VoIP-PAL's patents relating to the Alexa calling function. Testified in deposition. (2023)
- ***Wolfspeed, Inc. and Ideal Industries Lighting, LLC d/b/a Cree Lighting v. CAO Lighting, Inc.***  
*Patent Trial and Appeal Board, U.S. Patent and Trademark Office*  
Retained as an expert witness for CAO Lighting to evaluate economic evidence of commercial success of products embodying the challenged claims of the patents at issue. Testified in deposition. (2023)
- ***Stitch Editing Ltd. v. TikTok, Inc. et al.***  
*US District Court, Central District of California*  
Retained as an expert witness for TikTok and ByteDance Ltd. to evaluate Stitch Editing's damages associated with TikTok and ByteDance's alleged infringement of Stitch Editing's trademark and common law trademark rights. Testified in deposition and trial. (2023)
- ***CAO Lighting, Inc. v. General Electric Company, Consumer Lighting (U.S.) LLC d/b/a GE Lighting and Current Lighting Solutions, LLC***  
*US District Court, Delaware*  
Retained as an expert witness for CAO Lighting to evaluate its royalty damages associated with Defendants' infringement of CAO Lighting's patent relating to LED lighting sources. Testified in deposition and trial. (2023)

▪ ***Vervain, LLC v. Micron Technology, Inc. et al.***

*US District Court, Western District of Texas*

Retained as an expert witness for Micron to evaluate damages resulting from Micron's alleged infringement of Vervain's patents relating to certain flash memory products. Testified in deposition. (2023)

▪ ***Nichia Corporation v. Feit Electric Company, Inc.***

*US District Court, Central District of California*

Retained as an expert witness for Nichia to evaluate Nichia's damages resulting from Feit's infringement of its patent related to filament style LEDs. Evaluated Nichia's reasonable royalty damages. Also evaluated the commercial success associated with patent-practicing products. Testified in deposition and trial. (2023)

▪ ***Via Transportation, Inc. v. RideCo, Inc.***

*US District Court, Western District of Texas*

Retained as an expert witness for RideCo to evaluate damages resulting from Via's alleged infringement of RideCo's patents with respect to RideCo's counterclaims and damages resulting from RideCo's alleged infringement of Via's patents with respect to Via's claims. The subject matter is technologies supporting on-demand public transit services. Evaluated economic considerations relating to RideCo's request for a permanent injunction, in addition to RideCo's economic damages. Testified in deposition. (2023)

▪ ***Traxcell Technologies, LLC v. Celco Partnership d/b/a Verizon Wireless***

*US District Court, Western District of Texas*

Retained as an expert witness for Verizon to evaluate Traxcell's damages associated with Verizon's alleged infringement of Traxcell's patented C-SON and navigation technologies. Testified in deposition. (2022)

▪ ***Jawbone Innovations, LLC v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.***

*US District Court, Eastern District of Texas*

Retained as an expert witness for Samsung to evaluate Jawbone's damages associated with Samsung's alleged infringement of Jawbone's patented noise suppression technology in smartphones and earbuds. Testified in deposition. (2022)

▪ ***MasterObjects, Inc. v. Meta Platforms, Inc.***

*US District Court, Northern District of California*

Retained as an expert witness for Meta Platforms to evaluate MasterObjects' royalty damages associated with Meta's alleged infringement of MasterObjects' patents relating to Facebook's predictive search feature. Testified in deposition. (2022)

▪ ***W.H. Hall Family Holdings, LLP. v. Stryker Corporation***

*US District Court, Western District of Texas*

Retained as an expert witness for Stryker to evaluate Hall's royalty damages associated with alleged infringement of Hall's patents relating to stents. Testified in deposition. (2022)

▪ ***Dali Wireless, Inc. v. Corning Optical Communications LLC***

*US District Court, Northern District of California*

Retained as an expert witness for Corning to evaluate Dali Wireless's royalty damages associated with Corning's alleged infringement of Dali Wireless's patents relating to DAS systems. Testified in deposition. (2022)

- **CAO Lighting, Inc. v. Feit Electric Company**  
*US District Court, Central District of California*  
Retained as an expert witness for CAO Lighting to evaluate its royalty damages associated with Feit's infringement of CAO Lighting's patent relating to LED lighting sources. Testified in deposition. (2022)
- **Godo Kaisha IP Bridge 1 v. Nokia Corporation et al.**  
*US District Court, Eastern District of Texas*  
Retained as an expert witness for Nokia to evaluate IP Bridge's damages resulting from Nokia's alleged infringement of certain patents declared essential to 4G LTE and 5G wireless standards. Evaluated IP Bridge's reasonable royalty damages. Testified in deposition. (2022)
- **CAO Lighting, Inc. v. Osram Sylvania, Inc. and Ledvance LLC**  
*US District Court, Delaware*  
Retained as an expert witness for CAO Lighting to evaluate its royalty damages associated with Defendants' infringement of CAO Lighting's patent relating to LED lighting sources. Testified in deposition. (2022)
- **Conformis, Inc. v. Medacta USA, Inc. and Medacta International SA**  
*US District Court, Delaware*  
Retained as an expert witness for Conformis to evaluate Conformis's damages resulting from Medacta's infringement of its patents related to patient-specific instrumentation used in joint replacement procedures. Evaluated Conformis's reasonable royalty damages. Testified in deposition. (2022)
- **DoubleDay Acquisitions LLC d/b/a CSafe Global v. Envirotainer AB and Envirotainer Inc.**  
*US District Court, Northern District of Georgia*  
Retained as an expert witness for Envirotainer to evaluate preliminary injunction issues and commercial success relating to Envirotainer's alleged infringement of CSafe's patented VIP technology for use in active air cargo containers. Testified in deposition. (2022)
- **Jens H.S. Nygaard v. Federation Internationale de L'Automobile, Formula One Management Ltd., et al.**  
*US District Court, Western District of Texas*  
Retained as an expert witness for Formula One to evaluate Mr. Nygaard's damages resulting from Defendants' alleged infringement of its patent related to the Halo. Evaluated Mr. Nygaard's reasonable royalty damages. Testified in deposition. (2022)
- **Flexiworld Technologies, Inc. v. Roku Inc.**  
*US District Court, Western District of Texas*  
Retained as an expert witness for Roku to evaluate Flexiworld's damages resulting from Roku's alleged infringement of its patents related to specific ways to screen mirror and cast content. Evaluated Flexiworld's reasonable royalty damages. Testified in deposition. (2022)
- **Philips North America LLC v. Fitbit LLC**  
*US District Court, District of Massachusetts*  
Retained as an expert witness for Fitbit to evaluate Philips' damages resulting from Fitbit's alleged infringement of its patent related to a specific method of obtaining physiologic data on a device, transmitting it to a server, performing a calculation, and displaying that calculation on a mobile app. Evaluated Philips' reasonable royalty damages. Testified in deposition. (2021)

▪ ***AGIS Software Development LLC v. Uber Technologies Inc.***

*US District Court, Eastern District of Texas*

Retained as an expert witness for Uber to evaluate AGIS's damages resulting from Uber's infringement of its patents related to rider and driver communications, rider and driver location sharing, and forced message alerts. Evaluated AGIS's reasonable royalty damages. Testified in deposition. (2021)

▪ ***VideoShare, LLC v. Google LLC and YouTube, LLC***

*US District Court, Western District of Texas*

Retained as an expert witness for Google and YouTube to evaluate VideoShare's damages resulting from the defendants' infringement of its patent related to a particular method of uploading, transcoding, and delivering a video file with an advertisement. Evaluated VideoShare's reasonable royalty damages. Testified in deposition and trial. (2021)

▪ ***Jiaxing Super Lighting Electric Appliance Co., Ltd. and Obert, Inc. v. CH Lighting Technology Co.***

*US District Court, Western District of Texas*

Retained as an expert witness for Super Lighting to evaluate its lost profits and royalty damages associated with Defendants' infringement of Super Lighting's patents relating to LED tube lamps. Testified in deposition and trial. (2021)

▪ ***Via Vadis, LLC and AC Technologies, S.A. v. Amazon.com, Inc.***

*US District Court, Western District of Texas*

Retained as an expert witness for Amazon to evaluate Via Vadis's royalty damages associated with Amazon's alleged infringement of Via Vadis's patent relating to peer-to-peer file distribution technology. Testified in deposition. (2021)

▪ ***Via Vadis, LLC and AC Technologies, S.A. v. Blizzard Entertainment, Inc.***

*US District Court, Western District of Texas*

Retained as an expert witness for Blizzard to evaluate Via Vadis's royalty damages associated with Blizzard's alleged infringement of Via Vadis's patent relating to peer-to-peer file distribution technology. Testified in deposition. (2021)

▪ ***Profectus Technology LLC v. Google LLC***

*US District Court, Western District of Texas*

Retained as an expert witness for Google to evaluate Profectus's royalty damages associated with Google's alleged infringement of Profectus's patent related to digital picture displays. Testified in deposition and at trial. (2021)

▪ ***Unverferth Mfg. Co., Inc. v. Meridian Mfg., Inc.***

*US District Court, Northern District of Iowa, Western Division*

Retained as an expert witness for Unverferth to evaluate Unverferth's lost profits and royalty damages associated with Meridian's infringement of Unverferth's patents relating to its load/unload seed tenders. Also evaluated Meridian's counterclaims of infringement and associated royalty damages. Testified in deposition. (2021)

▪ ***LSP Products Group, Inc. v. Oatey Co.***

*US District Court, Northern District of Texas*

Retained as an expert witness for Oatey to evaluate LSP's claimed lost profits and royalty damages associated with Oatey's alleged patent infringement of LSP's patent relating to water outlet boxes with cross-linked polyethylene (PEX) connections. Testified in deposition. (2020)

▪ ***MV3 Partners LLC v. Roku, Inc.***

*US District Court, Western District of Texas*

Retained as an expert witness for Roku to evaluate MV3's claimed royalty damages associated with Roku's alleged patent infringement of MV3's patent relating to screen mirroring and casting content from a mobile device to a TV. Testified at deposition and at trial. (2020)

▪ ***Infernal Technology, LLC and Terminal Reality, Inc. v. Sony Interactive Entertainment America, LLC***

*US District Court, Eastern District of Texas*

Retained as an expert witness for Sony to evaluate Plaintiffs' claimed royalty damages associated with Sony's alleged infringement of Plaintiffs' patents relating to improved methods for rendering lighting and shadowing for video games. Testified at deposition. (2020)

▪ ***Girl Scouts of the United States of America v. Boy Scouts of America***

*US District Court, Southern District of New York*

Retained as an expert witness for the Girl Scouts of the USA (GSUSA) to evaluate GSUSA's economic damages, including disgorgement of the Boy Scouts of America's (BSA's) wrongful gains and GSUSA's corrective advertising expenses associated with BSA's alleged trademark infringement. Testified in deposition. (2020)

▪ ***Leading Technology Composites, Inc. v. MV2, LLC***

*US District Court, District of Maryland*

Retained as an expert witness for MV2 to evaluate Leading Technology Composites' (LTC's) claimed lost profits and royalty damages associated with MV2's alleged infringement of LTC's patent relating to composite armor panels with ballistic properties. Testified at deposition. (2020)

▪ ***Britax Child Safety, Inc. v. Nuna International B.V. and Nuna Baby Essentials, Inc.***

*US District Court, Eastern District of Pennsylvania*

Retained as an expert witness for Britax to evaluate its lost profits and royalty damages associated with Nuna's alleged infringement of patents covering its ClickTight installation system used in convertible car seats. Also performed an economic analysis in support of Britax's claim for a permanent injunction against Nuna. Testified at deposition. (2020)

▪ ***Escort Inc v. Uniden America Corporation***

*US District Court, Northern District of Texas*

Retained as an expert witness for Uniden to evaluate Escort's claimed lost profits and royalty damages associated with Uniden's alleged infringement of a patent related to its "mute memory" feature in GPS-enabled radar detectors. Testified at deposition. (2020)

## **SELECTED CONSULTING EXPERIENCE**

### **Intellectual Property: Patent Infringement, Trademark, and Trade Secret Theft Cases**

- Assisted in the evaluation of whether the plaintiff's licensing offers related to 3G and 4G/LTE wireless technology constituted FRAND licensing offers. Analyzed the economic benefits associated with patents, the economic benefits associated with standard-setting organizations, and the economic evidence related to the FRAND principles. Concluded that none of the plaintiff's licensing offers comported with FRAND principles.
- Assisted in the evaluation of the claimed damages of a medical device manufacturer who brought suit against a competing medical device manufacturer alleging patent infringement related to vascular closure

devices. Analysis included an assessment of the plaintiff's sales of vascular closure devices in the absence of the infringement and an incremental revenue and cost analysis. Assisted in the determination of reasonable royalty damages based upon the *Georgia-Pacific* factors and a determination of important negotiating points in a hypothetical licensor/licensee negotiation.

- Assisted in the evaluation of the claimed damages of a foam ear sleeve manufacturer who brought suit against a high-performance professional and personal audio earphone manufacturer, alleging patent infringement related to earpieces having disposable compressible polymeric foam sleeves. Assisted in the evaluation of the plaintiff's claimed royalty damages using market and industry data, a *Georgia-Pacific* factor analysis, and the changing licensing policies of the patent holder over time. Calculated an alternative royalty damages figure. Also assisted in the evaluation of the defendant's counterclaims of alleged patent misuse and antitrust violations. Analysis included a review of the patent holder's licensing strategy and certain provisions contained in the licenses into which the patent holder entered.
- Assisted in the evaluation of the plaintiff's claimed reasonable royalty damages in a patent infringement matter involving five defendants. The alleged infringing technology related to congestion management in ATM networks. Analyses included an assessment of sales of ATM network products allegedly containing the patented feature; an analysis of the price of the integrated circuits embodying the accused functionality relative to the price of the entire ATM product; and a review of industry license agreements. Assisted in the determination of reasonable royalty damages based on the *Georgia-Pacific* factors, in addition to a determination of important negotiating points in a hypothetical licensor/licensee negotiation.
- Assisted in the evaluation of reasonable royalty and lost profits damages in a patent infringement matter related to wave division multiplexing in optical networking equipment. Analysis included an assessment of alleged infringing sales under multiple potential damages scenarios. Lost profits analysis included a market share approach to calculating lost sales, and an incremental cost and revenue analysis. Evaluated both the plaintiff's claimed damages and the defendant's counterclaimed damages.
- Assisted in the critique of the plaintiff's claimed reasonable royalty damages in a patent infringement matter relating to implantable rate-responsive pacemakers and implantable cardioverter defibrillator devices (ICDs). Analysis included an assessment of alleged infringing sales of pacemakers and ICDs, review of the many license agreements entered into by the defendant, and an analysis of the defendant's cost savings associated with the allegedly infringing technology as compared to its next-best alternative. Assisted in the determination of reasonable royalty damages based on the *Georgia-Pacific* factors and a determination of important negotiating points in a hypothetical licensor/licensee negotiation.
- Assisted in the evaluation of the plaintiff's lost profits and reasonable royalty damages in a patent infringement matter relating to DVR technology. Analysis included an assessment of the plaintiff's sales of DVR products and subscriptions in the absence of the infringement and an incremental revenue and cost analysis. Assisted in the determination of reasonable royalty damages based on the *Georgia-Pacific* factors and a determination of important negotiating points in a hypothetical licensor/licensee negotiation. Also assisted in the determination of a post-verdict royalty rate based on the evidence and arguments found material to the granting of an injunction and the change in the parties' bargaining positions. Finally, assisted in the evaluation of the plaintiff's damages resulting from the defendant being in contempt of the court-mandated injunction.
- Assisted in the evaluation of the plaintiff's reasonable royalty damages in a patent infringement matter relating to RFID tags and scanners for companion-animal applications. Analysis included an assessment of infringing sales of RFID tags and scanners, review of license agreements produced by the parties, and market research on the companion-animal applications of RFID tags and scanners. Assisted in the

determination of a reasonable royalty rate based on a *Georgia-Pacific* factor analysis. Calculated the claimed royalty damages under various scenarios, based on potential court findings in terms of patents infringed.

- Assisted in the critique of the plaintiff's damages model in a trade secret theft case in the golf equipment industry. The plaintiff claimed disgorgement of global profits and other unjust enrichment due to the alleged misappropriation of trade secrets through the defendant's sale of the company and assets to a large sporting goods company. Analysis included calculating net profits from the sale of the accused golf clubs, calculating reasonable royalty damages, and evaluating the sale of the defendant's company and assets as an appropriate measure of damages.
- Assisted in the evaluation of the plaintiff's lost profits and reasonable royalty damages in a patent infringement matter related to coalbed methane (CBM) gas drilling. Analysis included an assessment of the plaintiff's CBM gas sales in the absence of the infringement, and the plaintiff's expected profitability of its dual-well systems in the Appalachia region. Specifically, developed economic models of CBM gas extraction from dual-well systems in order to estimate CBM gas sales and profitability associated with dual-well systems.
- Assisted in the evaluation of claimed damages in a patent infringement matter related to course management system products and services using the internet to facilitate the interaction of students and instructors. Analyses included a *Panduit* and a *Georgia-Pacific* factor analysis, and calculation of lost profits and reasonable royalty damages. Analyses of the plaintiff's lost profits included an analysis of the plaintiff's business model and customer relationships, the defendant's infringing sales based on customer licensing agreements and contracts, and the plaintiff's incremental profitability associated with lost long-term customer contracts.
- Assisted in the evaluation of damages in a design patent infringement matter related to a restaurant chain's distribution of antenna balls wearing NFL-marked helmets. Analyses included an analysis of disgorgement-related damages and reasonable royalty damages, including calculation of increased sales, if any, related to the distribution of the accused antenna balls and costs associated with the antenna ball program.

### **False Advertising Cases**

- Assisted in the evaluation of damages in a case involving thermal imaging products and an allegedly false and misleading marketing video. Assisted the plaintiff in its claim for disgorgement and lost profits damages. Also evaluated counterclaim involving alleged false advertising and alleged trademark infringement by the plaintiff. Evaluated the defendant's claimed damages arising from these allegations.
- Assisted in the critique of the plaintiff's claimed damages in a false advertising matter involving tooth-whitening products. A large consumer product company filed suit against the defendant for allegedly making misleading and disparaging statements about the plaintiff's tooth-whitening products in comparative advertisements shown on television. The plaintiff sought to recover damages from reduced sales resulting from the alleged false advertising. Analyses included evaluation and critique of plaintiff's expert's claimed damages model, including analysis of Nielsen scanner data and CyberMedia Research (CMR) media data. Analysis demonstrated that the plaintiff's expert did not measure the impact of the alleged misleading content, failed to account for alternative reasons for the plaintiff's sales declines, and implemented an incorrectly specified econometric model.
- Assisted in the critique of the plaintiff's claimed damages in a false advertising matter involving scouting cameras. The plaintiff sought to recover disgorgement damages, the defendant's advertising expenses, and

the plaintiff's claimed corrective advertising expenditures. Analysis included adjustments to the plaintiff's disgorgement damages claim, based on an evaluation of the defendant's false advertising claims in print, television, and online advertising; an assessment of the plaintiff's claimed corrective advertising; and an analysis of the defendant's advertising expenses related to the accused advertising.

### **Securities and Finance-Related Cases**

- Assisted in the evaluation of the plaintiff's claimed damages resulting from lost enterprise value due to the defendants' alleged fraudulent conduct resulting in artificial acceleration of income. Analyses included an assessment of alternative reasons for the plaintiff's business decline and ultimate bankruptcy, and an evaluation of the plaintiff's multiple approaches used in the determination of lost enterprise value.
- Assisted in conducting an "event study" on behalf of a technology company under investigation by the Securities and Exchange Commission (SEC) to determine if the company's alleged improper revenue recognition policies led to unjust enrichment related to a merger. Analyses included the development of an appropriate peer group and isolation of economy-wide, industry-specific, and company-specific factors impacting the particular firm's stock price.
- Assisted in the evaluation of the plaintiff's claimed damages relating to claimed "benefit of the bargain." Analyses included a company- and industry-specific risk factor analysis, an analysis of a competitor's stock prices, and a critique of the plaintiff's expert's discounted cash-flow damages model.
- Assisted in the evaluation of the plaintiff's claimed damages in a Rule 10b-5 dispute involving allegations that the defendant's public announcements that a joint venture into which it had entered was nonrecourse were false and misleading. Provided preliminary plaintiff-style damages estimates and settlement analyses based on various curative disclosure dates.
- Assisted in the evaluation of the plaintiff's claimed damages related to an alleged failure of the defendant to conduct appropriate due diligence with respect to specific hedge fund investments, and improper recommendation of investments in hedge funds with unsuitable risk profiles. Analyses included an assessment of the defendant's initial and ongoing due diligence with respect to specific hedge fund investments, and the communication of specific risks to the plaintiff investor.
- Assisted in the evaluation of a community bank's (plaintiff's) claims related to specific mortgage-backed securities (MBS) and asset-backed securities (ABS) investments recommended by the defendant for the bank's investment portfolio. Analysis included assessment of the appropriateness of the defendant's due diligence performed with respect to these investments and the communication of specific risks, including credit risk, to the plaintiff bank. Analysis also included evaluation of the bank's role in selecting MBS and ABS investments for its investment portfolio, and the impact of the global financial crisis on portfolio performance. Damages analysis included a benchmarking study showing that similarly situated MBS and ABS indices fared no better than the recommended portfolio during the global financial crisis.

### **Antitrust Matters**

- Assisted in the evaluation of the plaintiff's economic liability arguments in an antitrust claim related to restriction on the registration of cloned American Quarter Horses, including an evaluation of the plaintiff's theoretical economic model, and the effect, if any, on the supply and prices of high-quality American Quarter Horses. Also assisted in the evaluation of the plaintiff's damages claim related to claimed lost sales of cloned American Quarter Horses and associated breeding opportunities.

- Performed Appendix A analyses to address potential horizontal market power concerns resulting from mergers in the electricity industry. Analyses involved defining the relevant geographic and product markets, identifying competitors in the relevant markets, and analyzing market power and competition over time by calculating the Herfindahl-Hirschman Index (HHI) and other market concentration statistics. Work also included developing a transmission model reflecting system limits into defined destination markets.
- Estimated competitive benchmark prices for the California wholesale power market using the Henwood electricity production cost simulation model and analyzed alleged capacity withholding by merchant generators.
- Estimated the impact of market power in the ancillary services markets in California using regression analysis. Developed techniques for identifying anticompetitive behavior in these markets.
- Assisted in the examination of the operating efficiency and competitiveness of the electricity market in England and Wales. Analyzed the bidding behavior of generating assets to quantify the effects of anticompetitive behavior on electricity prices.
- Investigated allegations of price-fixing in the wholesale gasoline and fuel oil markets.

### **Regulatory Matters**

- Assisted in conducting an industry survey of maintenance activities for coal-fired generating units. Used statistical modeling to analyze census data in order to determine factors that drive maintenance industry-wide, in response to allegations by the Environmental Protection Agency (EPA) of Clean Air Act violations.
- Estimated “stranded costs” from deregulation for a major utility, based on projections of long-run equilibrium prices.
- Contributed to drafting a briefing paper on the restructuring and design of competitive markets in Mexico and Thailand. Focused on the issues surrounding wholesale electricity market design and a comparative analysis of the methods implemented by various international governments in handling these issues.
- Assisted in conducting a statistical benchmarking study to compare costs and efficiencies of a major utility’s generating assets in preparation for divestiture. Worked closely with senior management to understand company operations and competitive position to solve strategic, operational, and general management issues.
- Investigated the economic rationale underlying the rights-of-way provisions in the 1996 Telecommunications Act as it related to the city of Berkeley’s demand for significant revenue-related fees from Qwest Communications in return for access to public rights of way for telecommunications construction.

### **Other Engagements**

- Assisted in critique of the plaintiff’s assessment of the value of the plaintiff’s equity shares in a private e-marketing company, including claimed losses associated with the plaintiff’s lost “benefit of the bargain.” Analyses included evaluation of the plaintiff’s discounted cash flow model and assumptions, evaluation of alternative market factors impacting the value of the business, and application of discounts for minority interest and lack of control.
- Assisted in evaluation of the plaintiffs’ damages claims on behalf of 88 decedents of an airplane crash. The plaintiffs filed suits seeking damages in state and federal courts against the airline and certain parts

manufacturers. Analysis included evaluating lost earnings, lost non-salary benefits, lost retirement funds, and lost savings. In at least one case, analysis included evaluation of claimed lost business value by plaintiffs' expert.

- Assisted in evaluation of the plaintiff's claimed damages resulting from a breach of contract relating to dicamba-tolerant trait technology. Analyses included valuation of the technology at issue using economic modeling under various assumptions relating to penetration rates, international market entry, and technology royalty rates, *inter alia*.
- Assisted in critique of the plaintiff's evaluation of damages in a professional negligence matter regarding the lost sales associated with the plaintiff's cattle ranch operation. Reviewed opposing expert's damages calculation and assisted in sensitivity analyses regarding assumptions in the plaintiff's damages evaluations.

## Appendix B Information Reviewed and Considered

### **Description**

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#### **Legal Documents**

Class Action Complaint dated May 26, 2023

Defendants TikTok Inc. and ByteDance Inc.'s Answer to Plaintiffs' Second Amended Complaint dated April 22, 2024

Defendants TikTok Inc. and ByteDance Inc.'s Amended Responses and Objections to Plaintiffs' Second Set of Interrogatories (Nos. 3-14) dated April 16, 2024

First Amended Class Action Complaint dated October 20, 2023

Plaintiffs' Memorandum of Points and Authorities in Support of Their Motion for Class Certification dated June 21, 2024

Plaintiffs' Notice of Motion and Motion for Class Certification dated June 21, 2024

Second Amended Class Action Complaint dated April 11, 2024

#### **Deposition Transcripts**

Deposition Transcript of Bernadine Griffith Taken on June 26, 2024 and Associated Exhibits

Deposition Transcript of Branky Shao Taken on June 7, 2024 and Associated Exhibits

Deposition Transcript of Daniel Kirchgessner Taken on April 17, 2024 and Associated Exhibits

Deposition Transcript of Dr. Zubair Shafiq Taken on July 2, 2024

Deposition Transcript of Jacob Leady Taken on June 25, 2024 and Associated Exhibits

Deposition Transcript of Lizzie Li Taken on June 5, 2024 and Associated Exhibits

Deposition Transcript of Patricia Shih Blough Taken on June 27, 2024 and Associated Exhibits

Deposition Transcript of Rebecca Wong Taken on May 17, 2024 and Associated Exhibits

Deposition Transcript of Russell W. Mangum, III, Ph.D. Taken on July 3, 2024 and Associated Exhibits

Deposition Transcript of Simran Sahni Taken on June 18, 2024 and Associated Exhibits

#### **Declarations**

Declaration of Bernadine Griffith dated June 20, 2024

Declaration of Dr. Andrew Stivers dated July 12, 2024

Declaration of Jacob Watters dated June 20, 2024

Declaration of Patricia Shih dated June 21, 2024

Declaration of Ron Schnell dated July 12, 2024

Declaration of Russell W. Mangum III Ph.D. in Support of Plaintiffs' Motion for Class Certification dated June 21, 2024

Declaration of Zubair Shafiq, Ph.D., in Support of Plaintiffs' Motion for Class Certification dated June 21, 2024

#### **Documents Produced by Bernadine Griffith**

GRIFFITH002118 - 002118

GRIFFITH002119 - 002119

GRIFFITH002120 - 002120

GRIFFITH002121 - 002121

GRIFFITH002122 - 002122

GRIFFITH002123 - 002123

GRIFFITH002124 - 002124

#### **Documents Produced by TikTok**

TIKTOK-BG-000000245 - 000000256

## **Appendix B** **Information Reviewed and Considered**

### **Description**

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TIKTOK-BG-000000811 - 000000812  
TIKTOK-BG-000000835 - 000000835  
TIKTOK-BG-000000948 - 000000957  
TIKTOK-BG-000001068 - 000001082  
TIKTOK-BG-000001083 - 000001155  
TIKTOK-BG-000001335 - 000001345  
TIKTOK-BG-000001568 - 000001574  
TIKTOK-BG-000001576 - 000001589  
TIKTOK-BG-000001641 - 000001647  
TIKTOK-BG-000001909 - 000001925  
TIKTOK-BG-000002001 - 000002018  
TIKTOK-BG-000002112 - 000002129  
TIKTOK-BG-000002185 - 000002190  
TIKTOK-BG-000002238 - 000002260  
TIKTOK-BG-000002273 - 000002284  
TIKTOK-BG-000002298 - 000002298  
TIKTOK-BG-000002311 - 000002321  
TIKTOK-BG-000002338 - 000002384  
TIKTOK-BG-000002434 - 000002470  
TIKTOK-BG-000002534 - 000002538  
TIKTOK-BG-000002547 - 000002551  
TIKTOK-BG-000002631 - 000002631  
TIKTOK-BG-000002632 - 000002632  
TIKTOK-BG-000002638 - 000002638  
TIKTOK-BG-000002716 - 000002742  
TIKTOK-BG-000002788 - 000002788  
TIKTOK-BG-000002789 - 000002789  
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TIKTOK-BG-000002792 - 000002792  
TIKTOK-BG-000002793 - 000002793  
TIKTOK-BG-000002883 - 000002896  
TIKTOK-BG-000002918 - 000002929  
TIKTOK-BG-000002930 - 000002940  
TIKTOK-BG-000002941 - 000002954  
TIKTOK-BG-000003014 - 000003041  
TIKTOK-BG-000003042 - 000003044  
TIKTOK-BG-000003067 - 000003067  
TIKTOK-BG-000003082 - 000003097

## **Appendix B** **Information Reviewed and Considered**

### **Description**

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TIKTOK-BG-000003098 - 000003099  
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TIKTOK-BG-000008274 - 000008290  
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TIKTOK-BG-000008728 - 000008759  
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TIKTOK-BG-000008838 - 000008881  
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TIKTOK-BG-000008906 - 000008912  
TIKTOK-BG-000008957 - 000008974  
TIKTOK-BG-000009006 - 000009028  
TIKTOK-BG-000009035 - 000009035  
TIKTOK-BG-000009063 - 000009095  
TIKTOK-BG-000009096 - 000009103

## Appendix B Information Reviewed and Considered

### **Description**

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TIKTOK-BG-000009104 - 000009114  
TIKTOK-BG-000009140 - 000009145  
TIKTOK-BG-000009224 - 000009232  
TIKTOK-BG-000009259 - 000009276  
TIKTOK-BG-000009320 - 000009343  
TIKTOK-BG-000009810 - 000009814  
TIKTOK-BG-000009835 - 000009842  
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TIKTOK-BG-000010142 - 000010142  
TIKTOK-BG-000011404 - 000011406  
TIKTOK-BG-000024315 - 000024318  
TIKTOK-BG-000039859 - 000039861  
TIKTOK-BG-000039862 - 000039864  
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TIKTOK-BG-000039923 - 000039924  
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TIKTOK-BG-000110011 - 000110052  
TIKTOK-BG-000112193 - 000112197  
TIKTOK-BG-000112207 - 000112212

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### **Description**

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TIKTOK-BG-000113341 - 000113347  
TIKTOK-BG-000117752 - 000117760  
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TIKTOK-BG-000125693 - 000125753  
TIKTOK-BG-000131653 - 000131679  
TIKTOK-BG-000146624 - 000146627  
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TIKTOK-BG-0124015 - 0124015  
TIKTOK-BG-0124016 - 0124016

## Appendix B Information Reviewed and Considered

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TIKTOK-BG-0124017 - 0124017  
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TIKTOK-BG-0124019 - 0124019  
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TIKTOK-BG-0124041 - 0124041  
TIKTOK-BG-0124042 - 0124042  
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**Exhibit 1**  
**Key Attributes of Dr. Mangum's Claimed Market Measures**

Category of Data or Tasks	Dr. Mangum's Claimed Market Measures		
	Screenwise	SavvyConnect	Nielsen
<b>Identifiers and Identifying Information</b>			
Name	X	X	X
Phone number	X	X	X
Email address	X	X	X
Information associated with Google account (e.g., YouTube username)	X		
<b>Demographic Information</b>			
Date of birth	X		
Age	X		X
Gender	X	X	X
Education and training	X	X	
Marital status	X	X	
Employment status and/or profession	X	X	X
Income	X	X	
Race and/or ethnicity	X	X	X
Number and demographic information about other members of the household	X		X
<b>Internet Browsing Activity</b>			
Current URL visited	X	X	X
First- and third-party cookies	X	X	
Browsing history	X	X	X
User actions on websites (e.g., view a product, add to cart, complete a purchase)	X	X	X
Information entered on websites	X	X	
Information and contents on websites	X	X	
Data from linking third-party platforms (e.g., social networks)		X	X

**Exhibit 1**  
**Key Attributes of Dr. Mangum's Claimed Market Measures**

Category of Data or Tasks	Dr. Mangum's Claimed Market Measures		
	Screenwise	SavvyConnect	Nielsen
<b>Location Information</b>			
Coarse Location information (based on the IP address)		X	X
Precise Location information (e.g., latitude and longitude coordinates, GPS signals)	X		X
Home, mailing, or work address	X	X	X
<b>Device Information and Other Information</b>			
Information about device model, platform, and/or browser	X	X	X
Information about apps installed and/or used		X	X
Use of telephone, email, SMS, and instant messaging	X		
Content of the user's screen at any time	X		
Data associated to clicks and taps on a screen	X		
Information from motion, environmental, and position sensors on a device	X		
System information, including crashes, use of airplane mode, battery, and storage	X	X	
Information on wi-fi networks, data usage, and Bluetooth devices used	X	X	X

**Exhibit 1**  
**Key Attributes of Dr. Mangum's Claimed Market Measures**

Category of Data or Tasks	Dr. Mangum's Claimed Market Measures		
	Screenwise	SavvyConnect	Nielsen
<b>Other Tasks and Restrictions Required</b>			
Sign up for an account and accept terms of service	X	X	X
Fill out a profile	X	X	X
Log in from time to time	X	X	
Install an app or browser extension	X	X	X
Linking other apps or accounts (e.g., social networks)			
Respond to profile questions or surveys	X		X
Do not opt out of interest-based advertising	X		
Do not use "do not track" features or ad blockers	X		
Do not turn off location reporting services	X		

Notes:

- (a) "X" means that information is transmitted for all events.
- (b) Screenwise Privacy Policy does not differentiate between data collected by different meters, including hardware (e.g., a wi-fi router) and downloadable software (e.g., a browser extension).

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